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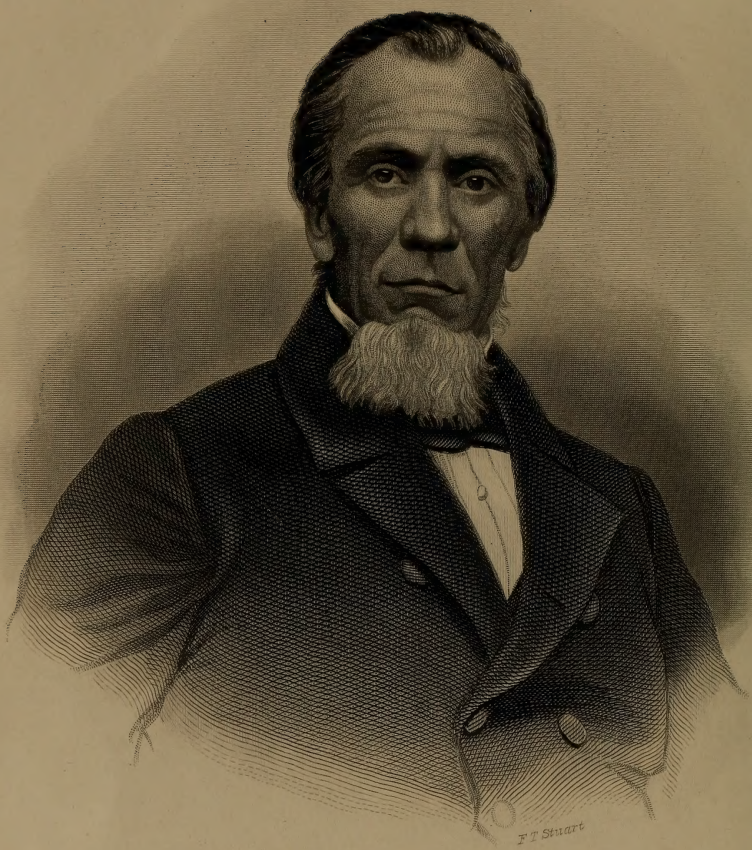

Very truly Yours
Ira Warren.

WARREN'S
HOUSEHOLD PHYSICIAN,
ENLARGED AND REVISED,

FOR THE USE OF

PHYSICIANS, FAMILIES, MARINERS, AND MINERS.

BEING A

BRIEF DESCRIPTION, IN PLAIN LANGUAGE,

OF ALL THE

DISEASES OF MEN, WOMEN AND CHILDREN,

WITH THE

LATEST AND MOST APPROVED METHODS OF TREATMENT.

BY

IRA WARREN, A. M., M. D.,

Fellow of the Massachusetts Medical Society, etc.

AND

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President of the Hahnemann Medical College, Chicago, Ill.

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ALLOPATHIC DEPARTMENT

REVISED BY

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HOMŒOPATHIC DEPARTMENT

REVISED BY

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ILLUSTRATED

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PREFACE.

THIS book is written for the people. It is based on the assumption that every man — the mechanic, the farmer, and the day laborer, as well as the professional man — has a right to all the knowledge he is capable of acquiring, on all subjects, — medicine not excepted. The book aims, therefore, to popularize, and adapt to the many what has been claimed as belonging only to the few.

I do not hesitate to avow that my sympathies, as a man, are with the great masses, who may be called the bone and muscle of the race. They are, in the main, more shrewd, more endowed with common sense, more simple and true in their natural instincts, and consequently less perverted, than those who claim more refinement and a higher place in the social scale.

"All men," says Hippocrates, one of the great fathers of medicine, "ought to be acquainted with the medical art. I believe that knowledge of medicine is the sister and companion of wisdom." Such knowledge would shield the many from the impositions of quackery. No one, I venture to say, who reads this book thoroughly, will be often imposed upon thereafter by quack nostrums, or quack doctors. Every man's physical organization is his own; and he is charged with the responsibility of taking care of it. To do this properly, he needs knowledge of it; and to withhold this from him, is another form of the old oppression, which decreed knowledge and power to the few, and ignorance and obedience to the many.

In accordance with the design of the work, it has been written in plain, simple English, and brought within the comprehension of all who have medium powers of mind. It has not been thought needful to reduce its language to the simpering style of baby-talk; that is done only by those who don't know much about the people.

In preparing this book, a great number of authors have been carefully consulted, to whom I acknowledge large indebtedness; yet the work is not a mere compilation. With the exception of a few minor parts, as those on Hydropathy, the Management of the Sick-Room, the Symptoms of Diseases, and, as in all medical works, a portion of the recipes, it has all taken shape, coloring, character, and language, in my own mind. In dealing with each disease, I have aimed to sketch a brief pen-and-ink portrait, so like it that every reader shall know the

original whenever he sees it; and then to give, in the fewest words, the best treatment.

No work of the sort has ever explained the reasons, or given the whys and wherefores of medicine to anything like the extent of this; nor has any one been so extensively illustrated. The engravings amount to two hundred and thirty-six in number, and have been, with few exceptions, done expressly for this work. Of the colored lithographs, there are *Thirty-six Figures* on eight splendid plates. They are inserted at great expense, and add much to the value of the book.

I. W

SECOND PREFACE.

THE Household Physician was written in the belief that the people were ready and waiting for a popular medical work based on liberal principles; and that one hundred thousand copies have already found a welcome home, in as many American families, is a sufficient evidence that the belief was well-founded. I say welcome home; and with very little stretch of modesty I might emphasize the word, for the popularity of the book has far outrun the author's hopes — many persons assuring the author and the publishers that fifty or one hundred dollars would be no temptation for them to part with the copy they have if they could not obtain another. Such an extensive sale of so large a book, with the demand constantly increasing, has been quite unexpected.

For these evidences of public favor the author is not ungrateful or unmindful of corresponding duties on his part. A chapter is now added, therefore, on "Old Age and its Diseases," — a subject never before introduced into any popular treatise on medicine, and very rarely, indeed, into any medical book. I have taken great pains in preparing it, and sincerely hope that many Fathers and Mothers will, in future years, be kindly remembered in consequence of the suggestions it contains. I also have the pleasure to present, from the pen of Dr. Dio Lewis, a very valuable contribution upon his new popular Gymnastics, illustrated with many cuts.

With these and some smaller additions, — improvements I think I may call them, — I submit the work again to the popular judgment.

I. W.

GENERAL INTRODUCTORY REMARKS.

Progress of Medicine.

MEDICINE may be divided into a science and an art. It is a science as it presents facts and evolves principles; an art as it consists of rules for practice. For its present attainments, it is indebted partly to researches scientifically conducted, and partly to empirical and hap-hazard discovery.

As a science, medicine is chiefly indebted, and must ever be, to the members of what is called the "regular profession." This body of men, while it contains numerous persons whose talents and attainments do not raise them above the merest quacks, does yet embrace large numbers of men who are alike ornaments of the race, and lights of their profession. It is to the writings of this class that every student must go who would qualify himself for the proper discharge of the duties of a physician; and he who attempts the practice of medicine without a knowledge of standard medical writings is either a fool or a knave — either without the brains to understand science, or destitute of the honesty to deal fairly with men.

While this is said, however, it must be granted that a respectable portion of the facts which make up the science of medicine have been contributed by the industry of men who have not had what is called a regular standing in the profession. I am sorry to be obliged to add that the great body of this class have been quacks and charlatans, while only a few of them have had talents and acquirements.

Nevertheless, they have been too indiscriminately condemned. Their labors have been useful in various ways, and have contributed to the advancement of medical knowledge. A regard for truth, not less than justice to these persons, requires this statement.

One-Idea Men. — The "irregulars," as they have been called, have generally had their hobbies, which they have ridden with singular diligence, and often in little better than John Gilpin plight. Yet they have drawn attention to great truths, which the regular profession either did not see, or would not commend; and they have done this by dwelling incessantly upon some *single idea*.

The one-idea men, of every class, have been ridiculed in all ages; and indeed have always exhibited some singular obliquities. Yet when they have been men of learning and talents, they have accomplished great things, either for good or evil.

Martin Luther was strictly a one-idea man. The whole force of his extraordinary character was given to the propagation of the single doctrine of justification by faith; and by the incessant efforts he made for this purpose, he sank the doctrine deeper into the heart of Europe than a hundred equally powerful men could have done by giving it only an ordinary share of attention.

William Ellery Channing was a one-ideaist. *Man*, the noblest work of creation, to be developed, educated, adorned, loved, made like unto God, was the thought of his life, — a thought which he embellished and moulded into all the forms of beauty which our flexible language is capable of producing. Under the mild promptings of his genius, and the workings of this thought, philanthropy, quickened into a new life, spread out her arms, and embraced the world.

Sir Isaac Newton, was a one-ideaist. So entirely did he devote his great powers to astronomy and the higher mathematics, that he became unfitted for the duties of social and domestic life — so unfitted, that when induced by his friends to give a little attention to courtship, he fell into one of his abstractions, and detected himself in using his lady-love's fore-finger to poke down the ashes in his pipe! But, Sir Isaac advanced mathematical science to a point far beyond its previous attainments, and laid it under such obligations as no general scholar could have done.

It is in this way, though in a vastly less degree, and without the scientific method, that one-ideaists in medicine benefit the world. They seize upon some single remedy, — generally one which has been overlooked, — and using it themselves to the exclusion of all others, they press it upon the world as the panacea for all its ills. With them disease is a unit, and they have found its one all-important remedy. Thus convinced, they press it upon others with the enthusiasm of fanatics. Testing it in all cases, they develop all its virtues. Those who have the good sense to turn their attention to it have only to use it in those cases for which its adaptation is proved.

It is in this way that these men become, incidentally, medical discoverers; and not being burdened with modesty, they never withhold their importunities till the world acknowledges whatever value there is in their discovery. And although they may do some mischief with the single-edged tool which they handle so industriously, I doubt if they do much more than many better workmen who use *too many*. At all events, wise and generous men thank them for their gift to the profession, small, though it may be, and use it in the light of a clearer knowledge.

Hydropathy. — As an illustration of what I have just been saying, I may refer to hydropathy, or the plan of treating all diseases by water.

The singularly careful avoidance, by the whole medical faculty, for many ages, of the article of pure water as a medicinal, or, rather, health-imparting agent, was anything but creditable to the profession.

It is now admitted by all sensible men that water, cold and warm, used at proper times and to a reasonable extent, has great power over

several diseases, and is a powerful promoter of health. No physicians, except those who are too indolent to know what is going on in the world, or too fast locked in old prejudices to touch new things, now omit its use in *many* cases. How warm and sincere my own approval of water as a remedy is, almost every page of this volume will attest.

Indeed, it may honestly be allowed that the hydropathists have fairly *drowned* the almost criminal professional prejudice against water. They are in all the more need of this concession, since in their absurd zeal to cure *all* diseases by water, and make aquatic animals of men, they have also drowned their own common sense.

Homœopathy. — This mode of practice is of comparatively recent origin; but it has already sunk itself deep into the popular heart, and has drawn to its support many of the wealthy, the cultivated, and the intelligent, in our most refined communities. I do not profess to comprehend and appreciate its principles, nor would it be honest in me to pretend to see how its infinitesimal doses can produce the results which it often shows, and which it is fair to confess look like singular success; and saying this, I can neither adopt nor approve the violent denunciations and censures which so many are induced (by fashion, I fear) to employ towards this generally well-cultivated class of practitioners. I hold them as useful members of the profession, and mean ever to cultivate towards them fraternal feelings. They give great attention to exercise, diet, the use of water, etc., — things which contribute very powerfully to preserve health, and to restore it when lost. In this thing, the old school practitioners ought to learn a most important lesson from them. In truth, they are learning it, but very slowly and *reluctantly*, I am sorry to say.

The central idea of the homœopathist, that "like cures like," the "great law of cure," as he styles it, I do not feel called upon to discuss — theories being of much less consequence than rules of practice. The old-school men have certainly much to learn from him respecting the augmented power of medicine from the greatest possible division by *trituration*. We have learned from him, too, — though many are too ungenerous to confess the source of the information, — that we may gain our purposes with much less medicine than we were once in the habit of giving.

Eclectics. — There is a large and growing class of physicians, called, at first, after the founder of the school, Thomsonians. Subsequently, they were generally known as Botanic Physicians. Now they pass under the title of Eclectics.

These men, directing their attention, at first, chiefly to cayenne and lobelia, have gradually extended their zealous researches over the vegetable kingdom, and have gathered much information worthy to be preserved. These researches have revealed a sadly neglected duty on the part of old-school practitioners, and, in 1852, drew from the "Committee on Indigenous Medical Botany," appointed by the "American Medical Association," the confession that our practitioners generally have been extremely ignorant of the medicinal plants even in their own neighborhoods; and to this fact the com-

mittee attributed it, that the Eclectic physicians had in so many instances supplanted the "regulars" in the confidence of the people.

The education and talents of this class of practitioners have gradually risen, year by year, until they have several medical schools, where students are well instructed in the principles of medicine, by men of real ability. This is particularly true of the school at Cincinnati. They have also a literature of no mean significance, especially in the department of materia medica. The list of remedies they have given to the world, drawn from our home plants, are a boon of no small value. I regard them as equal in value to all we were previously in possession of from the vegetable kingdom. The podophyllin and leptandrin, as substitutes, in most cases, for mercurials, can hardly be too highly prized.

And yet, it is mortifying that the remedies which these men have given us are, by hundreds of our old-school practitioners, not even known by name, and where known, generally not honored with a trial. King's "American Eclectic Dispensatory," a book of 1,300 pages, in which they are well described, is almost unknown among us. Aside from the copy in my own library, I do not *know* that one is owned by any member of the Massachusetts Medical Society, in Boston. I consider this a disgrace, for, however learned a man may be, he is not fully equipped as a practitioner until he is acquainted with this class of medicines.

Physiologists. — Beside these various direct practitioners of medicine, there is the large and quite intelligent class of physiologists, including the phrenologists, who nearly discard medicine, and, appealing to the laws of life established by the Creator, urge temperance in eating and drinking; exercise in the open air; securing of pure air by ventilating dwellings, school-houses, and churches; bathing in cold and warm water; cheerfulness of mind; and the cultivation of the Christian virtues, as the only rational modes of securing health and life.

I confess myself inclined to forgive this class their error in banishing medicine, in view of their zeal and success in disseminating hygienic information of the utmost value and importance to mankind. Put man into harmony with nature, and establish over him the empire of reason, and their theory would be excellent; but as things are, medicines, like prisons, and alms-houses, and large cities, are "necessary evils."

Other Practitioners. — Finally, we have Mesmerists, Pathetists, Electro-biologists, Spiritualists, Nutritivists, and what not, all pretending to cure disease by processes peculiar to themselves. They are all experimenters in different departments of nature, — now spreading over our eyes a large plaster of humbuggery, and now drawing a small curtain and giving us a peep into the large and well-furnished rooms which nature has fitted up for our reception, by and by, when we are better instructed.

All Useful in a Degree. — On the whole, I am disposed to regard all the operators in the different departments of medicine as *useful*

in their degree; excepting always those mercenary quacks, who lie about their remedies to make money. Each of all these (I mean all sincere and true men who believe what they teach) is aiding in some measure the general advancement. And though the truths, as they gather and present them, are but fragmentary, they are useful in the hands of those *true Eclectics*, who have the wisdom and independence to select the best things out of all systems.

General Conclusion. — This brings me to remark that there is but one truly liberal and philosophical school of medicine. It is the Eclectic, — composed of those who have liberality enough to reject every *exclusive system*, and to select out of all systems those things which are approved by experience and reason.

I have already spoken of a school of practitioners called Eclectic. To a certain extent they are entitled to the name, but I think not entirely. They have formed a separate and exclusive school. They have turned some articles out of the materia medica *possibly* for no better reason than because their party is committed to their rejection; whereas they should have no party, but allow each man to act as if he were a citizen of the world only, and not a member of any restricted association. But I will not quarrel with them on this point. I think they are *becoming* eclectic.

Progress of Medicine. — There have been long periods when the science and the art of medicine made scarcely any progress. They are now advancing, — in some departments quite fast.

The Chemistry of Man, commonly called Animal Chemistry, is opening new sources of light. Few of the profession have yet studied this essential branch of medical science; but the delinquents are sleeping in the rear, and will soon awake to find themselves among the ghosts of a dead generation.

The writer was in the habit of asserting, many years ago, that most of the true progress in medicine must come through Animal Chemistry; and the developments of the last few years have made good the assertion. Liebig, a diligent student in chemistry, has done much to open the way for inquirers in this department. Simon has, perhaps, done more. Mialhe is a yet later explorer, and has made valuable discoveries.

The result is, that students have now before their minds, and are endeavoring to solve and act upon as fast as possible, inquiries and propositions like these: —

What is the chemical composition of the solids and fluids of the healthy human body?

What is the nature of the changes which occur in the composition of the solids and fluids during disease?

What alterations in the chemical composition of the solids and fluids take place during the operation of medicines?

Before it can exert any remote action on the animal economy, a remedy must be absorbed.

Before it can be absorbed, it must be soluble in the fluids of the living body.

Medicines are subject to chemical changes during their passage through the system.

These changes are regulated by ordinary chemical laws, and may therefore, to some extent, be foretold and made available in the cure of disease.

These chemical laws are disturbed and varied, to some extent, by the law of vitality, — just as the needle is made to vary by disturbing forces.

What are those disturbances, and to what extent, and under what circumstances, do they occur?

With these and similar inquiries and propositions before his mind, diligently studied, a man will in time learn to prescribe with some intelligent aim. He will not know everything, to be sure, but what he does know, he will have a reason for knowing. If he give a medicine, he will have in view the chemical changes of the solids and fluids of the body, known to be produced by the disease he is combating. He will also keep in mind the solution of the medicine in the fluids of the body, and the chemical reaction between its components and the acids, alkalies, etc., found in the alimentary tube and elsewhere.

As the science of medicine advances, and becomes liberal and eclectic in its character, gathering from all systems the best attested facts, and using them to the exclusion of all mere theories, these facts must not themselves degenerate into mere petted theories, but must be held in subordination to future experience. Medical practitioners, who would meet the wants of the age, must be men of progress. The light of to-morrow, with them, must modify and improve the light of to-day. They must knock, every hour, for admission into some new apartment of nature.

Need of Liberality.— That medical progress may be real, physicians must be free from bigotry. They must have no narrow prejudices against any man, or class of men; but be ready to examine candidly any new thought or new remedy brought to their notice, from whatever source it may come.

They should not hedge themselves about with such restrictive by-laws and societary rules as are calculated to fetter their thoughts, and turn their investigations, by a sort of moral necessity, into the narrow channels of party conservatism; remembering that he who is once enclosed by such restrictions must hew a path for his feet through bigotry, and even malevolence itself, before he can escape them, or be a free man in any noble sense.

The members of medical societies do themselves no credit, in the nineteenth century, by putting on airs, and telling *others* to stand at a distance. This would do better, had medicine become an exact science; but while the primary effects of even *opium* are not settled — some physicians considering it as primarily stimulant, others as sedative, others as stimulant to the nerves and sedative to the muscles, others as neither, and still others as alterative, — such exclusiveness seems neither wise nor modest. When the professors of the healing art can hoard medical knowedge as misers hoard gold, and can sub-

mit its purity to equally certain tests, it will appear in better taste for them to grow exclusive. Until then, the most becoming badge they can wear is the Christian direction: "Let each esteem others better than himself."

Medical societies, with liberal by-laws, are fitted to do good; but it would be hard to show that those with stringently-restrictive rules can operate otherwise than as checks upon progress. In truth, they are apt to become mere catacombs in which to embalm dead ideas. They are very liable to be made the instruments for accomplishing the ambitious purposes of a few leading men. They tend to suppress all sympathy with everything outside their organization; and they beget a feeling like that which would forbid the fixed stars to drop their light into our atmosphere without first coming down and joining the solar system.

Conservative Leaders. — There are no influences which hold so steady a check upon medical progress as the conservative leaders in many of our medical associations. Not that they are opposed to improvement in the medical art, or would object to any amount of discovery, if it could come to the profession through channels which they have the honor of opening. But against all light from outside, or from obscure sources, they will draw down the curtains, and close the doors; and, if it chance by any means, in spite of them, to get within the sacred enclosure, they will call it darkness, and, as priests of the temple, will attempt to atone for the indignity offered to the god of medicine, and fill the whole sky with murky clouds from their altars.

These men have strong faith in caste, and in the right of the few to govern the many. In the low places of society, they look for nothing but ignorance and poverty. Notwithstanding that the light of every natural day breaks in the horizon, and *ascends*, they so far despise analogies as to insist that all medical light breaks at what they call the zenith of the profession, and *comes down*. With them the temples of Esculapius are all rebuilt, and they are the priests; and to offer in sacrifice the smallest medicinal plant is a sacrilege, unless it be entrusted to their hands.

Such persons measure and weigh a man by the amount of money he has. Property is their god, which gives laws to everything. With them, knowledge, like property, goes to posterity by will, — they being the principal testators. Like their money, too, it goes chiefly to their sons, and to certain favored institutions, by whom, and in which, it is to be hoarded, and whence it is to go out only in certain approved channels, weighed and stamped, like coin from the mint.

These are the men who regard knowledge as a contraband article, unless regularly entered at the custom-house, with bills of lading properly certified by the conservative magnates at some other metropolis. With them, knowledge is not like the west wind, fanning the brow of the peasant as gently as that of the king, — not like the light of heaven, entering the small, clean window of the hut, as readily as the larger one of the palace; not a boon which comes alike freely to all, and which is to be everywhere amplified, changed as

circumstances and conditions require, and especially adapted to the present hour. It is rather, as they too often view it, like lithographed letters of advice, printed upon stamp paper, and carefully sealed up and addressed to posterity. And then, if they can be made the mail-carriers, and be permitted to pass, unchallenged, with the precious bag, from post to post, and pass it over, carefully sealed, to the next generation, they will think it has done its work, and that they have fulfilled their mission.

I would not be unjust or severe, but I cannot but remark further, that these men present but one view of humanity. They are monotonous objects of inspection. Look at them a thousand times, and you see only the same unaltered phase of life. To the mariner on life's ocean, they are not safe lights. If he approach them on the dark side, they remain black as night to him, until he comes round to their shining front. They are not revolving lights. They have light; it may be bright and genial; but it gleams out upon the waters only in one direction. It does not sweep round, and throw its rays upon every mariner's path.

Such men are useful, but only to a certain class. They have in them no true *omnilogy* — they are not *all-teaching*. Their lives are instructive to their friends, their clique, their party, their school; but a stumbling-block, a hindrance, an oppression, an offence to everybody else. They are like porcupines, with fronts smooth and easy of access; but their backs bristle with quills to stick into those on the wrong side. They are not whole men. Humanity has infused into them only one or two of its elements. They have length, but no breadth. They are citizens of Boston, New York, Philadelphia, or Cincinnati, but not of the world. Within certain circles, they are genial friends, but cynics and haters outside of them. From their high places, they come down to their humble followers with tokens of friendly recognition; upon others they frown and lower like armed castles.

The True Physician. — How different the character of the true man and physician! He is genial in his disposition. He has no dislikes and antipathies, and hates no men except tyrants. He accepts knowledge, though it come from the humblest source; believing there is no experience but will repay a study of it, and no husbandman's ploughshare but turns up a soil worth analyzing. He belongs exclusively to no party, and can be approached easily by respectable men of every stamp. Whether belonging to the same society with him, or not, you may take hold of his nature and draw it out, without having it slip from your fingers, and spring back from your presence into a thousand kinks, like an overtwisted thread. He is a whole man. God made him for the world, and not for a party. By some strong influence you may possibly, for a time, draw him from the world into some narrower sphere, but not only will his reluctant nature, like a retiring tide, run back continually to embrace the continent, but will soon break from its confinement, and like a full sea, come back, boiling and running over.

What is now Wanted. — The foregoing remarks indicate one great,

leading want, in order that medical knowledge may increase. It is *liberality*, in the true and full sense. We want true men in high places, who will not only *let their own light shine everywhere*, but *will cease to hinder other men's light from shining*.

Beyond this, and of nearly equal importance with it, *we want medical knowledge diffused among the people*. We want — what the world has never seen — *a popular medical literature*. We want the temples of Esculapius pulled down, and the priests turned into the streets to become teachers of the multitude, rather than worshippers in the inner sanctuary.

I know this want will be stoutly denied, but not, I think, on well-considered grounds. We do not think it necessary to confine a knowledge of the soul to the ministers of religion. There is no branch of theology which we do not deem it proper for laymen to study; we even popularize it for our children. In the obscurest towns of New England, laymen who follow the plough or push the plane, become, in many cases, eminent theologians. Why should they not study the lower science which relates to the body? They have not been able to heretofore, because its mysteries have been purposely hidden under technicalities. These coverings should be torn off.

It is said that those who begin to read upon medicine are very apt to imagine themselves afflicted with the various symptoms they find described. To some small extent this is true; but it is also true that the light they obtain relieves them from many apprehensions which their previous ignorance allowed to prey upon them; as boys lose their fears when the light of the morning changes to some familiar object the ghost of the preceding night.

Physicians oppose the popularizing of this kind of knowledge too often, I fear, upon the sordid ground of self-interest. They think their own services will be less sought.

We do not dispense with the services of ministers because the people study theology, neither shall we cease to employ teachers and practitioners of medicine when each man and woman is wise enough to study the healing art. The principal change we shall witness will be much larger attainments in knowledge among practitioners, — just as the ministers of religion now know, and are obliged to know, ten times as much as in those darker periods when the people received all spiritual knowledge from their mouths. The teachers of any art or science are obliged to keep in advance of their pupils. Let medicine become a popular study, and we shall have very few ignorant physicians, and quackery will become one of the impossibilities. Homœopathists, Eclectics, Hydropathists, and Physiologists, believe in scattering medical books, stripped of their technicalities, among the multitude, and their people purchase very few secret, advertised medicines; — these being chiefly bought and consumed by the followers of those who believe this kind of reading fosters quackery!

ANATOMY.

ANATOMY describes the structure and organization of living beings.

Special Anatomy treats of the weight, size, shape, color, etc., of each organ separately.

General Anatomy investigates the tissues or structures from which organs are formed.

Surgical Anatomy or Regional Anatomy considers the relations of organs to one another.

Physiological Anatomy treats of the uses or functions of organs in health.

Pathological Anatomy describes the alterations made upon different organs by disease.

We shall here introduce a very brief compendium only of Special Anatomy.

It is of great consequence that every person should have some knowledge of anatomy and physiology. Self-knowledge ought to extend to the body as well as the mind. To know one's self, physically, is to gain a new insight into that wonderfully skilful adjustment of means to ends which is never absent from the works of God. Without this knowledge, one cannot know how to take care of the health; and without health, life loses most of its value.

Structure of the Body.

THE human body is composed of solids and fluids.

The fluids are most abundant in children and youth. It is this which gives softness and pliancy to their flesh. In old age the fluids are less abundant, and the flesh is more hard and wrinkled.

The fluids contain the whole body, as it were, in a state of solution; or rather, they hold the materials out of which it is manufactured.

Chemical Properties of the Body.

THE four elements, oxygen, hydrogen, carbon, and nitrogen, make up nearly the whole bulk of the fluids and soft solids of the human body. A number of other elements, chiefly in a state of combination, and in much smaller quantities, enter into several of the tissues.

Binary Compounds. — Thus, we have *carbonic acid* in blood, urine

and sweat; and we have *water* universally diffused through the system, — each of these substances being a *binary* compound, that is, composed of two elements.

Compounds of more than two Elements are widely distributed over the body; as,

Carbonate of Soda in serum, saliva, bile, mucus, sweat, and tears.
Carbonate of Lime in cartilage, bone, and teeth.
Phosphate of Lime in bones, teeth, and cartilage.
Phosphate of Iron in blood, gastric juice, and urine.
Chloride of Sodium in blood, brain, muscle, bone, cartilage and pigment.
Chloride of Potassium in blood, gastric juice, milk, and saliva.
Chloride of Calcium in gastric juice.
Sulphate of Potassa in urine, gastric juice, and cartilage.
Sulphate of Soda in sweat, bile, and cartilage.
Sulphate of Lime in bile, hair, and scarf-skin.
Oxide of Iron in blood, black pigment, and hair.

Organized Compounds. — Beside the above inorganic elements and compounds, several organized substances, or *proximate elements*, as they are called, exist largely in the body. The chief of these are albumen, fibrine, gelatine, mucus, fat, caseine, and osmazome. Others need not be named.

Albumen is found in great abundance in the human body. It is the raw material out of which the flesh and other tissues are made. The white of an egg, which is nearly pure albumen, is a good specimen of it.

Fibrine, when removed from the human body, changes from a soluble to an insoluble state. In other words, it coagulates in a kind of net-work. Nearly the same thing takes place constantly in the living body, when the liquid fibrine leaves its soluble state, and is deposited as solid flesh. Fibrine bears the same relation to albumen that woollen yarn does to wool; it is spun from it in the busy wheel of organic life. And the flesh or muscle is related to fibrine as the cloth is to yarn; it is woven from it in the vital loom. Fibrine has been called *liquid flesh*.

Gelatine exists largely in the ligaments, cartilages, bones, skin, and cellular tissue. When dissolved, five parts in one hundred of hot water, it forms a thick jelly. *Isinglass* is a form of gelatine obtained from the air-bladder of the sturgeon and the cod-fish. Glue is still another form of gelatine. It is extracted from the bones, and parings of hides, and the hoofs and ears of cattle, by boiling in water. Black silk, varnished over with a solution of gelatine, forms *court-plaster*.

Mucus is a sticky fluid secreted by the gland-cells. It is spread over the surface of the mucous membranes, and serves to moisten and defend them from injury.

Fat consists of cells held together by cellular tissue and vessels, and contains glycerine, stearic acid, margaric acid, and elaic acid. It

has no nitrogen. If the stearic acid be in excess, the fat is hard; if the elaic acid preponderate, it is soft. The stearine extracted from fat is used for making very hard candles.

Caseine is abundant in milk and constitutes its curd. It is held in solution in milk by a little soda. When dried, it is cheese. It is found in blood, saliva, bile, and the lens of the eye. It forms the chief nourishment of those young animals which live on milk. It is found in peas, beans, and lentils. Vegetable and animal caseine are precisely alike in all their properties. Fibrine and albumen contain almost exactly the same amount of oxygen, hydrogen, carbon, nitrogen, and sulphur, which is found in caseine. This latter, when taken into the stomach, therefore, goes, without much change, to the formation of the albumen and fibrine of the body.

Physical Properties of the Body.

The Tissues. — The solid organized substances of which the human body is composed, are called *tissues*. There are various kinds of tissues.

The Cellular Tissue, commonly called *areolar*, is made up of small fibres and bands woven together into a sort of net-work, with numerous little spaces opening into each other. These spaces are filled with a watery fluid; and when this is greatly increased by disease, so as to cause the parts to swell, and the skin to shine, the person has anasarca, or cell dropsy. The uses of this tissue are to give parts and organs a kind of elastic cushion to rest upon, so that they may not be bruised and injured by the shocks of life; to make a kind of safe highway for delicate vessels to pass from one part of the body to another; and to furnish a beautifully arranged lodgment for the watery fluid which gives such roundness, smoothness, and grace to the human form. The opening of the cells into each other explains the reason why feeble persons have swelled feet and ankles in the evening, and not in the morning, — the fluid settling down from cell to cell, into the lowest parts, while they are up during the day, and running back to its proper place while they are lying down during the night.

The Mucous Tissue, or *mucous membrane*, lines all the cavities which communicate with the air, as the mouth, stomach, bowels, lungs, etc. It is supplied with numerous small glands which secrete a sticky kind of fluid called mucus, to protect the surface from any injury which might be inflicted by air, or by irritating substances suspended in it.

The Serous Tissue, or *membrane*, lines all the cavities which do not communicate with the air, that is, all those which are shut, and have no outward opening. The skull, the chest, and the belly are lined by this kind of membrane. The membrane itself forms the closed sack, — one layer of it being attached to the cavity it lines, while the other is folded back upon and around the contents of the cavity, which are left outside of the sack. A watery fluid oozes from the inner surface of the sack, to make its sides glide easily upon each other. When

some disease causes this water to be poured out too freely, so as to fill or partly fill the cavity, we have dropsy of the brain, or chest, or belly, as the case may be.

The Dermoid Tissue covers the whole outside of the body. We call it the *skin*, or *cutis*. It is similar in structure to the mucous membranes, which are a mere continuation of it. It is harder than the mucous membrane, because more exposed to injury. In health, it never ceases to secrete and throw off a fluid which we call insensible perspiration while it is in the form of an invisible vapor, and perspiration, or sweat, when it is so increased as to be seen. So great is the sympathy between this dermoid covering of the body and the mucous membranes, that when it is *chilled* so as to stop the invisible perspiration, the internal membrane becomes affected, and we have a sore throat, or diarrhœa, or running at the nose; that is to say, when the skin cannot sweat, the mucous membrane begins to sweat.

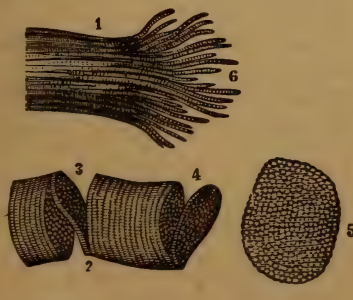
The Fibrous Tissue consists of closely united fibres, and for whatever purpose used, forms a fine, dense, and enduring body. In some cases it takes the form of a membrane, as the *dura mater*, which lines the interior of the skull and spinal column. The *ligaments* which hold the bones together, and the *tendons* or *cords*, which fasten the muscles to the bones, are fibrous bodies. It is this firm substance of which rheumatism frequently takes hold, and this is the reason why it lingers so much about the joints. It sometimes takes hold of the ligament which fastens the deltoid muscle to the bone of the upper arm, about two-thirds of the way from the elbow to the shoulder. This muscle *lifts up* the arm. In this form of rheumatism, therefore, the arm hangs helpless at the side.

The Cartilaginous Tissue covers the ends of the bones where they come together to make a joint. It is well fitted to make the joint work easy, being smooth, hard, and elastic.

The Osseous or Bony Tissue varies in its composition, density, and strength, according to the age of the person, and the uses of the bone.

The Muscular Tissue, or *muscle*, being made for a great deal of pulling and lifting, is formed something like a rope, except that there is no twisting. Many small fibres or filaments unite to form fasciculi. A fasciculus is a bundle of fibres surrounded by a delicate layer of cell tissue called *sarcolemma*, — just as a cord is a number of smaller threads of cotton or hemp bound together. A number of these fasciculi united together, make a muscle, — just as several chords, called strands, twisted together, make a rope. Figure 1 gives us a good view of the fibres and bundles, highly magnified.

FIG. 1.



The Adipose Tissue is the material which the human body works up into pots and cells containing *fat*. It is found chiefly under the skin and muscles of the belly, and around the heart and kidneys. By the increase of this tissue, persons may become enormously enlarged without having their muscles at all increased in size. Such a condition is to be deplored, — the body having become merely the store-house or depot of myriads of pots of fat.

The Nervous Tissue is composed of two distinct kinds of matter, — the one gray and pulpy, called *cineritious*, the other white and fibrous, called *medullary*. The external part of the brain and the internal portion of the spinal cord are composed of the gray or ash-colored tissue; the nerves are made only of the white or fibrous matter, and are inclosed in a delicate sheath called *neurilemma*.

Vital Properties of the Body.

Bodies begin their growth with a simple *cell*, which is a delicate little bladder or shut sack. Cells take their rise in that portion of the blood which is capable of being *organized*, and which is called *blastema*.

In animal bodies, each cell generally begins as a minute point in the blastema, and grows until a transparent bladder or vesicle springs out from one side of it, and soon appears to enclose it. The bladder is then called the cell, and the point or dot is its *nucleus*. Within this nucleus appears another dot, which is called the *nucleolus*. When fully ripened, the cell bursts and sets the nucleus free, and this, in its turn, matures and yields up its contents. Thus all cells have their origin in germs produced by previously existing parent cells. They are multiplied with great rapidity. Having grown to a certain extent, they lose their fluid contents, and their walls collapsing or coming together, they form simple membraneous discs. In this way, with some variations, the simple tissues of the body begin to be, and the foundation is laid for the noble structure of man.

Anatomy of the Bones.

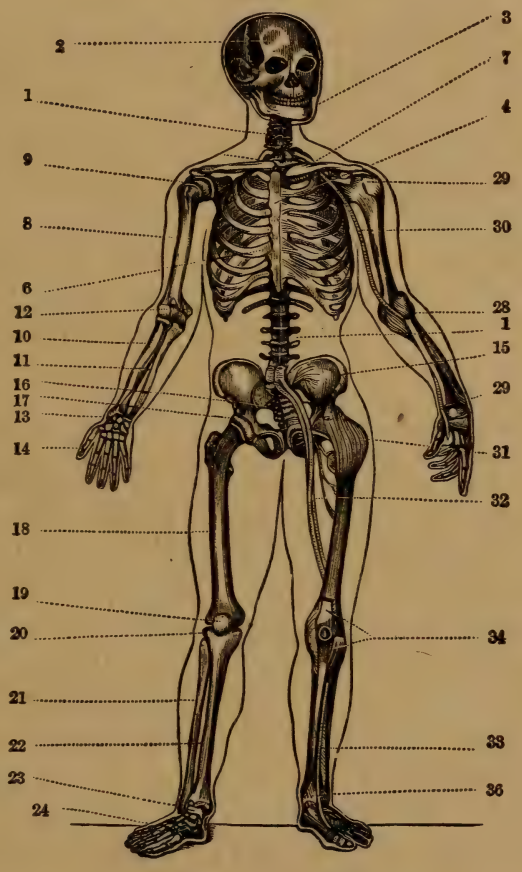
The human skeleton is composed of two hundred and eight bones, the teeth not included.

When fastened together by natural ligaments, the bones are said to form a *natural skeleton;* when attached by wires, an *artificial skeleton.*

In Figure 2, — 1, 1, represent the spinal column; 2, the skull; 3, the lower jaw; 4, the breast bone (sternum); 6, the ribs; 7, the collar bone; 8, the bone of the upper arm (humerus); 9, the shoulder joint; 10, the radius; 11, the ulna, 12, the elbow joint; 13, the wrist; 14, the hand; 15, the haunch bone; 16, the sacrum; 17, the hip joint; 18, the thigh bone; 19, the knee cap (patella); 20, the knee joint; 21, the fibula; 22, the tibia; 23, ankle joint; 24, the foot; 27, 28, 29,

the ligaments of the shoulder, elbow, and wrist; 30, the large artery of the arm; 31, the ligaments of the hip joint; 32, the large blood vessels of the thigh; 33, the artery of the leg; 34, 35, 36, the ligaments of the knee cap, knee, and ankle.

FIG. 2.



The protuberances or swellings in certain parts of bones are called processes, and are the points to which muscles and ligaments are fastened.

The bones are supplied with nutritive vessels, and, like other parts of the body, are formed from the blood. At first they are comparatively soft, and cartilaginous. After a time, in the young animal, they begin to change to bone at certain places, called *points of ossification*. They are covered with a strong fibrous membrane called the *periosteum*. A somewhat similar covering upon the cartilages has the name of *perichondrium*, and that which covers the skull is the *pericranium*.

The bones are compounded of earthy and animal matter. From

the former, — phosphate and carbonate of lime, — they receive their strength; from the latter, — cartilage, — they derive their life.

Put a bone for a few days into diluted muriatic acid, — one part of acid to six of water, — and the phosphate and carbonate of lime will all be removed, while the bone will remain the same in shape. It will now be comparatively soft, and may be bent, or even tied into a knot, without breaking. Place a similar bone in the fire for a few hours, and it will also retain its shape, but the cartilaginous portion will be gone. It is now brittle, and may be picked in pieces with the fingers.

Fig. 3.

The bones are divided into those of the head, *thirty;* of the body, *fifty-four;* of the upper limbs, *sixty-four;* and of the lower limbs, *sixty.*

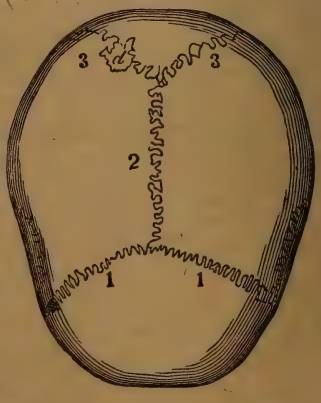
Bones of the Head.

The bones of the head are divided into those of the *skull*, the *ear*, and the *face.*

The skull has eight bones. They are composed of two plates, one above the other, with a *porous* partition between. These two plates are capable of giving the brain very powerful protection against injury, the outer one being fibrous and *tough*, — the inner one, hard and *glass-like*, and hence called *vitreous.*

The middle layer has the name of *diploe.* Its spongy nature deadens the jar from a blow inflicted upon the outer table. In early life, when the bones are tender and yielding, this porous layer is not needed, and is not found.

Fig. 4.



That the bones of the skull may not easily slip by each other, and get out of place, they are *dovetailed* together in curious lines called *sutures.* In advanced years, these generally close up, the bones uniting firmly together. In early life they are quite open, the firm bones not covering the whole brain. The opening of the coronal suture in childhood is called a fontanelle. It presents a soft place upon the top of the head, where the finger could be pressed down into the brain. In Figure 4, — 1, 1, show the coronal suture on the front and upper part of the skull; 2, the sagittal suture on the top of the skull; and 3, 3, the lambdoidal suture, running down on each side of the back part of the skull.

Figure 5 shows the skull bones separated from each other at the sutures: 1, the frontal bone; 2, the parietal; 3, the occipital; 4, the temporal; 5, the nasal; 6, the malar; 7, the superior maxillary; 8, the unguis; 9, the inferior maxillary. Arnott has demonstrated that the form of the skull is the best possible for sustaining weights, and resisting blows. The summit of the head is a complete arch, like that of a bridge.

FIG. 5.

The ear has four small bones, which aid the sense of hearing.

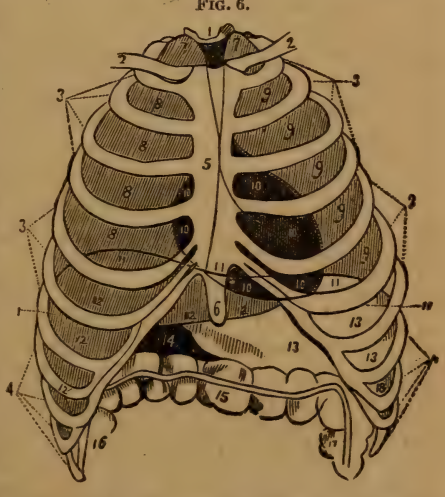
The bones of the face are fourteen in number. They hold the soft parts in place, and aid in grinding the food.

Bones of the Trunk.

IN the trunk there are twenty-four ribs; twenty-four pieces in the back bone or spinal column; four bones in the pelvis and hips; one breast bone, called sternum; and a bone at the base of the tongue, called os hyoides. They are so put together as to form two great cavities, namely, the thorax or chest, and the abdomen or belly.

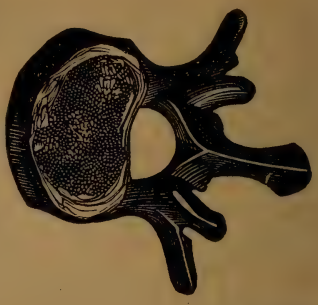
The *ribs*, connecting with the back bone behind, and the breast bone in front, form the thorax, which contains the lungs and heart. The Figure 6 shows the natural form of the healthy chest: 1, is the spine; 2, 2, the collar bones; 3, 3, the seven upper, or true ribs; 4, 4, the five lower or false ribs; 5, the breast bone, to which the true ribs are united; 6, the sword-shaped cartilage which constitutes the lower end of the breast bone, called *ensiform cartilage;* 7, 7, the upper part of two lungs; 8, 8, the right lung seen between the ribs; 9, 9, the left lung; 10, 10, the heart; 11, 11, the diaphragm, or midriff; 12, 12, the liver; 13, 13, the stomach, 14, 14, the second stomach, or duodenum; 15, the transverse colon; 16, the upper part of the colon on right side; 17, upper part of colon on left side.

FIG. 6.



Each piece of the spinal column is called a *vertebra*. Upon every one of these are seven projections, called *processes*, — a part of which are for linking the bones together, and the rest to furnish attachments for the muscles of the back.

Fig. 7.



The projections are linked together in such a way, that a continuous channel or opening runs down through the whole, in which is lodged the spinal cord, or *medulla spinalis*. This nervous cord is connected with the base of the brain, and is a kind of continuation of it.

Between all the vertebræ are certain cartilaginous cushions, which, when compressed, spring back, like India rubber, and thus protect the brain from being injuriously jarred by running, leaping, or walking.

The *pelvis* has four bones; the two nameless bones, — *innominata*, — the *sacrum*, and the *coccyx*. In the side of each of the nameless bones is a deep, smooth cavity, called the *acetabulum*. Into this the round head of the thigh bone is nicely fitted. When the bone is thrown out of this cavity, the hip is said to be out of joint. The sacrum took its name from the fact that the heathens used to offer it in sacrifice. With them, it was the sacred bone. The coccyx is the lower termination of the back bone. These bones are represented in Figure 8: 1, 1, being the innominata; 2, the sacrum; 3, the coccyx; 4, 4, the acetabulum; *a*, *a*, the pubic portion of the nameless bones; *d*, the arch of the pubes; *c*, the union of the sacrum and the lower end of the spinal column.

Fig. 8.

Bones of the Upper Extremities.

The *shoulder blade* (scapula), the *collar bone* (clavicle), the *bone of the upper arm* (humerus), the *two bones of the fore-arm* (ulna and radius), the *bones of the wrist* (carpal bones), the *bones of the palms of the hand* (metacarpal bones), the *bones of the thumb and fingers* (phalanges), — these are the bones of the upper limbs.

The *collar bone* is fastened at one end to the breast bone, at the other end to the shoulder blade. It keeps the shoulders from dropping forward. Many persons allow it to fail of this end by getting very much bent in early life. This happens at school, when children are allowed to sit in a stooping posture. In the French, a race remarkable for a straight, upright figure, this bone is said to be longer than in any other people.

The *shoulder blade* lies upon the upper part of the back, forming the shoulder. It has a shallow cavity (glenoid cavity), into which is inserted the head of the upper arm bone. Several strong muscles are attached to the elevations of this bone, which keep it in its place, and move it about as circumstances require.

The *upper arm bone* has its round head fastened in the glenoid cavity, by the strong capsular ligament, forming a joint capable of a great number of movements. At the elbow it is united with the *ulna* of the fore-arm. It is a long cylindrical bone, represented by Figure 9: 1, is the shaft of the bone; 2, the large, round head which fits into the glenoid cavity; 3, the surface which unites with the ulna.

Of the two bones of the fore-arm, the *ulna* is on the inner side, and unites with the humerus, making an excellent hinge-joint. The other bone of the fore-arm, the *radius*, lies on the outside of the arm, — on the same side with the thumb, — and unites, or articulates, as we say, with the bones of the wrist. In Figure 10: 1, is the body of the ulna; 2, the shaft of the radius; 4, the articulating surface, with which the lower end of the humerus unites; 5, the upper extremity of the ulna, called the olecranon process, which forms the elbow joint; 6, the point where the ulna articulate with the wrist.

FIG. 9.

FIG. 11.

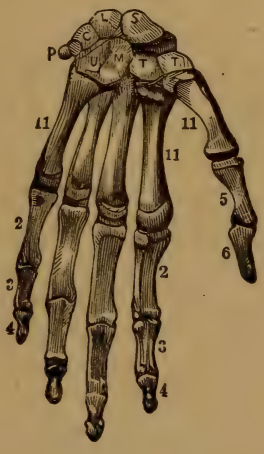


FIG. 10.

The eight bones of the *wrist* or carpus are ranged in two rows, and being bound close together, do not admit of very free motion. In Figure 11: S, is the scaphoid bone; L, the semilunar bone; C, the cuneiform bone; P, the pisiform bone; T, T, the trapezium and trapezoid bones; M, the os magnum; U, the cuneiform bone. The last *four* form the second row of carpal bones. 11, 11, are the metacarpal bones of the hand; 2, 2, the first range of the finger bones; 3, 3, the second range of finger bones; 4,4, the third range of finger bones; 5, 6, the bones of the thumb.

Of the five metacarpal bones, four are attached below to the first range of the finger bones, and the other to the first bone of the thumb, while the whole are united to the second range of the carpal bones above.

Bones of the Lower Extremities.

THESE are the *thigh bone* (femur), the *knee pan* (patella), the *shin-bone* (tibia), the *small bone of the leg* (fibula), the *bones of the instep* (tarsal bones), the *bones of the middle of the foot* (metatarsal bones), and the *bones of the toes* (phalanges).

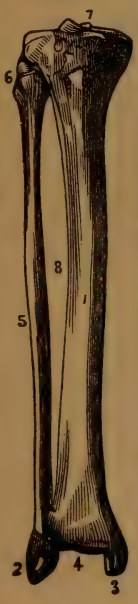
The *thigh bone* is the longest bone in the system. Its head, which is large and round, fits admirably into the cavity in the innominatum, called acetabulum, and forms what is called a ball-and-socket joint. In Figure 12: 1, is the shaft of the thigh bone (femur); 2, is a projection called the trochanter minor, to which some strong muscles are attached; 3, is the head of the femur which fits into the acetabulum; 5, is the external projection of the femur, called the external condyle; 6, the internal condyle; 7, the surface which articulates with the tibia, and on which the patella slides.

FIG. 12.

The *knee pan* or *knee cap* (patella) is placed on the front of the knee, and being attached to the tendon of the extensor muscles above, and to the tibia by a strong ligament below, it acts as a pulley in lifting up the leg.

The *shin bone* (tibia) is the largest of the two in the lower leg, and is considerably enlarged at each end.

FIG. 13.



The small bone of the leg (fibula) lies on the outside, and is bound to the larger bone at both ends. Figure 13 shows the two bones of the leg: 1, being the tibia; 5, the fibula; 8, the space between the two; 6, the junction of the tibia and fibula at the upper extremity; 3, the internal ankle; 4, the lower end of the tibia that unites with one of the tarsal bones to form the ankle joint; 7, the upper end of the tibia which unites with the femur.

The *instep* (tarsus) has seven bones, which, like those of the wrist, are so firmly bound together as to allow but a limited motion.

The *metatarsal bones*, corresponding with the palm of the hand, are five in number, and unite at one end with the tarsal bones, and at the other with the first range of the toe-bones.

The tarsal and metatarsal bones are put together in the form of an *arch*, the spring of which, when the weight of the body descends upon it in walking, prevents injury to the organs above. (Fig. 14.)

The *phalanges* have fourteen bones. The great toe has

two ranges of bones; the other toes have three. Figure 15 gives a view of the upper surface of the bones of the foot; 1, is the surface of the astragalus where it unites with the tibia; 2, the body of the

FIG. 15.

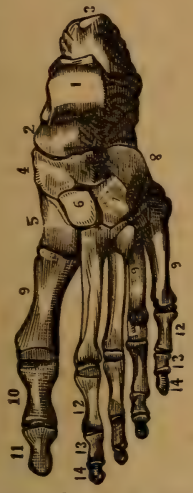


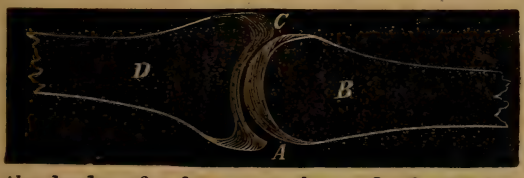
FIG. 14.

astragalus; 3, the heel bone (os calcis); 4, the scaphoid bone; 5, 6, 7, the cuneiform bones; 8, the cuboid; 9, 9, 9, the metatarsal bones; 10, the first bone of the great toe; 11, the second bone; 12, 13, 14, three ranges of bones forming the small toes.

The Joints.

THAT bones may be of any use, they must be jointed together. Joints are of the greatest importance. It is necessary they should be so constructed that there shall be no harsh grating of the bones upon each other, and no injurious jars in walking, etc. To prevent these things, a hard, smooth, and yet yielding, cushion-like substance is required between them in joints. Such are the *cartilages*. Figure 16 gives a specimen of these intervening cartilages. D, is the body of a bone, at the end of which is a socket; C, the cartilage lining the socket, thick at the sides and thin in the centre; B, the body of a bone, at the end of which is a round head; C, the investing cartilage, thin at the sides and thick in the centre.

FIG. 16.



Cartilage grows thinner, harder, and less elastic in old age. Hence old people are not quite as tall as in middle life, and a little stiffer in their joints.

The *synovial membrane* is a thin layer covering the cartilage, and being bent back upon the inner surface of the ligaments, it forms a closed sack. From its inner surface a sticky fluid oozes out, which helps the joints to play easily.

There are other smaller sacks connected with the joints, called bursa mucosæ. They secrete a fluid similar to that from the synovial membrane.

The ligaments. To retain the bones in their places at the joints, some strong, flexible straps are required to stretch across from one to the other, and to firmly unite them. Such are the ligaments.

They are the pearl-colored, lustrous, shining parts about the joints, in the form of straps and cords. There are a number of them so woven together as to form a complete covering of the joint, called a capsular ligament. In Figure 17 : 1, 2, are ligaments extending from the hip bone, 6, to the femur, 4. In Figure 18 : 1, is the socket of

FIG. 17.

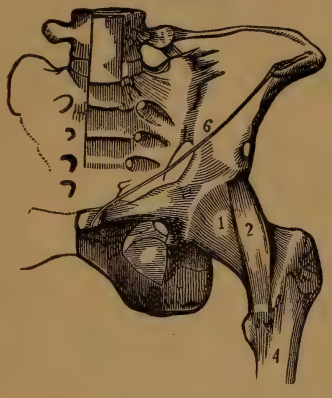
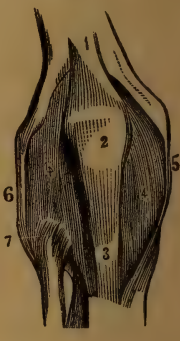


FIG. 18.

FIG. 19.



the hip joint; 2, the head of femur, lodged in the socket; 3, the ligament within the socket. In Figure 19 : 1, is the tendon of the muscle which extends the leg; 2, the knee cap (patella) ; 3, the anterior ligament of the patella; 6, the long external lateral ligament; 4, 4, the synovial membrane; 5, the internal lateral ligament; 7, the anterior and superior ligament that unites the tibia with the fibula.

Uses of the Bones.

THE bones are to the body what the frame is to the house. They hold up and retain the other parts in their proper places. They furnish points of attachment for the muscles, to hold the body together, and to give it motion. They also furnish strong, bony cavities for the lodgment and protection of such delicate organs as the eye, the brain, and the heart.

A single bone, examined by itself, might not seem to have much beauty or design about it; it might even look clumsy and misshapen. But when all the bones are inspected with reference to each other, we immediately discover a general plan upon which they are made, and are compelled to admire their beautiful harmony, and the symmetrical grace with which they act. They show us that God can command our wonder, even in the bony frame of our bodies.

The Muscles.

THAT part of the animal's body which we call lean meat is composed of muscles. We have already explained that muscles are composed of threads, etc., put together in great numbers, forming bundles. So numerous are these threads and bundles in some cases, that the muscles which are composed of them have a strength truly wonderful.

Toward the end of the muscle, the fibres cease, and the structure is so modified as to become a white cord of great density and strength. This cordy substance is fastened to the bone so strongly, that it is impossible, except in some rare case, to detach it. Generally the bone will sooner break than this attachment will give way. Sometimes this cord spreads out like a membrane. It is then called *fascia* or *aponeurosis*.

The fibres of a muscle have the peculiar property of *contracting* under a nervous stimulus sent to them by the will. These contractions cause them to act as pullies, and to move the bones, and consequently the limbs and body, in such direction as the will commands. This is the special use of the muscles. All our movements are caused by them. They pull us about, not blindly and at random, but under the direction of an intelligent will.

The manner in which a muscle acts, with the cord attached, may be seen by examining the leg or "drum-stick" of a fowl. If the cord on one side be pulled, the claws are shut; if that upon the other side be drawn, they will open. If both be pulled, they are held fast in one position, neither opening nor shutting.

An examination of a piece of boiled lean meat, will show the threads of which it is composed. With proper instruments, these may be unravelled, as it were, until fibres will be found not larger than a spider's web. These, covered with sheaths of great delicacy, extend beyond the fleshy fibre, and with the cell substance connecting the fibres, are condensed into tendon.

Millions of these sheathed fibres are gathered into a bundle, and covered with a sheath, and thus form what is called a *fasciculus*. A muscle is a number of these fasciculi made into a bundle, and covered with a sheath called a *fascia*. (Fig. 1.)

The arm is a number of muscles bundled together, and covered, likewise, by a fascia.

The fibres in a fasciculus being parallel, act together. But the fasciculous bundles, which make up a muscle, act in various ways.

Shape of the Muscles. — Some muscles are fusiform or spindle-shaped, so that the attachment occupies but a small space. (Fig. 20.)

FIG. 20.

Other muscles are radiate or fan-shaped. (Fig. 21.) Such is the temporal muscle, the thin edge of which is attached to the side of the head, without producing an elevation or deformity.

FIG. 21.

In some cases the fasciculi are arranged upon one or both sides of a tendon. In this way a

great number may concentrate their action upon a single point. Such muscles are called *penniform*, — being shaped like the feather end of a pen. (Fig. 22.)

Fig. 22.

In other instances, the fasciculi form circular muscles, — *orbiculares*, or *sphincters*, as they are called. These surround certain openings into the body, which they are designed to close, either in whole or in part. They surround the eyelids, the anus, the mouth of the womb, etc. (Fig. 23.)

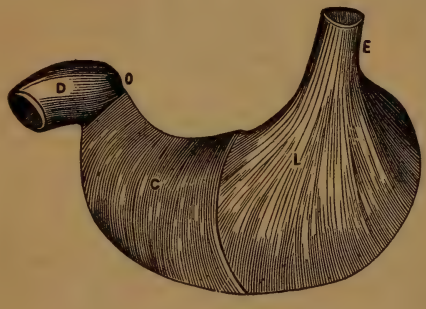
Fig. 23.

In still other instances the fasciculi are ranged side by side in rings, forming muscular tubes. By the successive contraction of these rings, any substance is driven through the tube, — as food or drink through the gullet of a cow. Figure 24 is a section of the gullet: *a*, *b*, show the circular fibres; *c*, the longitudinal.

Fig. 24.

Sometimes the fasciculi curve around in parallel layers, or interlace with each other, forming a bag or pouch. By the contraction of these fasciculi, the contents of the bag will be turned from side to side, as in the case of the stomach, or driven out, as in that of the heart. Figure 25 shows the muscles of the stomach; L, represents the fibres running in one direction; C, in another; E, lower end of gullet; O, pylorus; D, beginning of duodenum, or second stomach.

Fig. 25.



Number of Muscles. — The muscles of the body are as numerous as the ropes of a ship, — there being five hundred or more. Some anatomists reckon more, some less.

They are divided into those of the *head and neck*, those of the *trunk*, those of the *upper extremities*, and those of the *lower extremities*.

They are too numerous to be named and individually described in this brief account of them. A part of them are voluntary, that is, under the control of the will; while another part are involuntary, moving without reference to the will. The heart is of the latter kind, it being necessary for it to keep moving when the will and mind are asleep.

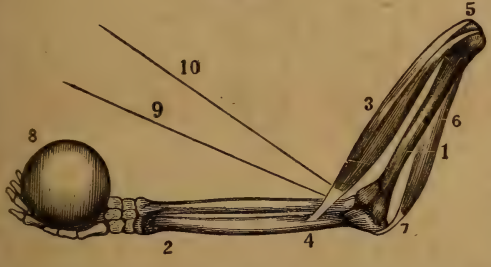
On the back there are six layers of muscles, one above another. Such a number are necessary to perform the numerous movements of the back, neck, arms, etc. Every expression of the human face, as joy, sorrow, love, hate, hope, fear, etc., is produced by the gentle pulling of muscles, made expressly to indicate these emotions.

The *diaphragm* is a large flat muscle, reaching across the great cavity of the body, and dividing the chest from the belly. It is pen-

etrated by the food-pipe going to the stomach, and by the great blood-vessels leading to and from the heart. It is shaped like the cover of a dinner-dish, the convex surface being turned up. When the breath is drawn in, it sinks down towards a level, thus enlarging the chest at the expense of the belly. When the breath is thrown out, the reverse takes place.

Mode of Action. — The *contractibility* of a muscle, of which I have spoken, is simply its power of *shortening* itself. The hand is raised by the shortening of a muscle in front, attached to the bone above the elbow, and to a bone below the elbow. The contraction of an antagonistic muscle behind, also attached above and below the elbow, brings the hand back to its place. Figure 26 shows how all joints are moved: 1, is the bone of the arm above the elbow; 2, one of the bones below the elbow; 3, the muscle which bends the elbow; 4, 5, attachments of muscles to bones; 6, the muscle that extends the elbow; 7, attachment to elbow; 8, weight in hand. The muscle, 3, contracts at the central part, and brings the hand up to 9, 10.

FIG. 26.



The complication, variety, and swiftness of motion, executed by muscles, are past conception. Every movement which a human being makes, from the heavier motions of the farmer in cultivating his fields, up to the magic touches of the painter's brush, and the methodical frenzy with which the great master's fingers sweep the piano, are all made by muscles obeying an intelligent will.

The Teeth.

THE teeth are not like other bones, either in composition, method of nutrition, or growth. When broken they do not unite, not being furnished with the necessary power of reproduction of lost parts.

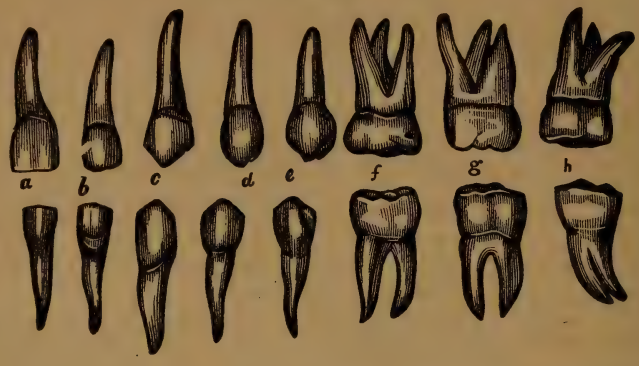
Both the upper and lower teeth are set into bony sockets, called alveolar processes. These, with the fibrous gums, give the teeth a very firm setting.

Origin. — The teeth have their origin in little membraneous pouches within the bone of the jaw; and in their interior, have a fleshy bud. From the surface of this the bone or ivory exudes. The tooth and the bony socket are developed and rise up together, — the former, when sufficiently long, pushing itself through the gum.

Number. — The first set of teeth are only temporary, and are called *milk teeth*. There are but twenty of them. Between the age of six and fourteen, these become loose, and drop out, and the permanent teeth appear in their places. Of these there are thirty-two, sixteen in each jaw.

Names. — The four front teeth in each jaw, *a*, *b*, Figure 27, are the *cutting teeth* (incisors); the next one, *c*, is an *eye tooth* (cuspid); the

FIG. 27.



next two, *d*, *e*, are *small grinders* (bicuspids); the last three, *f*, *g*, *h*, are *grinders* (molars). One appears late on each side, from the age of twenty to twenty-four, and is called *wisdom tooth*.

Composition. — A tooth is composed of *ivory* and enamel. The internal part is ivory, which is harder than bone. The coating upon the surface is *enamel*, which is still harder than ivory. That part which rises above the jaw bone is called the *crown;* it is this only which is covered with enamel. The part within the jaw is called the *root or fang;* this is composed of bony matter, through which small vessels pass in to nourish the tooth. Small white nerves also pass into the tooth, — of the presence of which we have terrible evidence in tooth-ache.

Use of the Teeth.

THE incisors cut the food asunder; the molars break down its solid parts, and grind it to a fineness which fits it for the stomach.

In masticating the food, the lower jaw has two movements, the up and down motion, like a pair of shears, and the lateral or grinding motion. These two movements are performed by different sets of muscles. Flesh-eating animals have only the up and down motion; vegetable eating animals have only the lateral or grinding motion; while man has both the up and down and the lateral. This seems a pretty clear intimation that he is to eat both flesh and vegetables.

The teeth aid us in articulating words, and they give a roundness and symmetry to the lower part of the face. When well formed, and kept in good condition, they add much to the beauty of the face, and their decay is an irreparable loss. Their proper care and treatment are spoken of in another place.

The Digestive Organs.

THE alimentary organs are the mouth, the teeth, the salivary glands, the pharynx, the stomach-pipe (œsophagus), stomach, bowels (intestines), chyle vessels (lacteals), thoracic duct, liver, and sweet bread (pancreas).

The preparatory process of digestion, the mastication of food, takes place in the mouth, where the food is mixed with saliva, a secretion of the salivary glands. Of these glands there are six, three on each side.

The Parotid Gland lies in front of the external ear. It has a duct opening into the mouth opposite the second molar tooth of the upper jaw. This is the gland that swells in the disease called mumps. Hence the disease is also called *parotitis*.

The Submaxillary Gland is inclosed within the lower jaw, in front of its angle. Its duct opens into the mouth by the side of the bridle of the tongue (frænum linguæ).

FIG. 28.

On each side of this string or bridle, and under the mucous membrane of the floor of the mouth, lies the *sublingual gland*, which pours its saliva into the mouth through seven or eight small ducts. A disease called the *frog*, consists in the swelling of this gland. Figure 28: 1, the parotid gland; 2, its duct; 3, the submaxillary; 4, its duct; 5, the sublingual.

The Pharynx is a continuation of the mouth, and is the cavity just below the soft palate. The two passages going to the nose (posterior nares), the one going to the stomach (œsophagus), and the one going to the lungs (larynx and trachea), all meet in this cavity. In Figure 29: 1, is the trachea; 2, the larynx; 3, the œsophagus; 4, 4, 4, muscles of the pharynx; 5, muscles of the cheek; 6, the muscle which surrounds the mouth; 7, the muscle forming the floor of the mouth.

FIG. 29.

The Stomach Pipe is a long tube, like the fireman's hose, descending behind the wind-pipe, the lungs, and the heart, through the diaphragm into the stomach. It is composed of two membranes laid together, like two pieces of cloth. The inner one is mucous, the

outer muscular. The two sets of fibres composing the muscular coat are arranged circularly and longitudinally. (Fig. 25.)

The Stomach lies in the upper part of the belly, to the left, and directly under the diaphragm. It has an upper opening, where the stomach-pipe enters it, called the *cardiac orifice*. This is the larger end of the stomach, and lies on the left side; the smaller end connects with the upper bowel, at which point it has an opening called the *pyloric orifice*. In addition to mucous and muscular coats, similar to those which compose the œsophagus, the stomach has still another over both, a *serous* coat, very strong and tough, to give this working organ additional endurance. Within, it has many glands to secrete the gastric juice.

The Intestines, or *alimentary tube*, or *bowels*, are divided into the *small* and the *large* intestines.

The small intestine has a length of about twenty-five feet, and is divided into three parts, — the *duodenum* the *jejunum* and the *ileum*.

Of these three divisions, the *duodenum* is the largest, and is about a foot in length. It begins at the pyloric orifice of the stomach, and passes backward to the under surface of the liver, whence it drops down perpendicularly in front of the right kidney, and passes across the belly behind the colon, and ends in the *jejunum*.

The Jejunum continues the above, and terminates in the *ileum*.

The Ileum is a continuation of the *jejunum*, and opens, at an obtuse angle, near the haunch bone, into the *colon*. A valve is located here, to prevent the backward passage of substances from the colon into the ileum.

At this point the large intestines begin, and here is situated the *cœcum*, a blind pouch, or cul-de-sac, attached to which is the *appendix vermiformis*, a worm-shaped tube, of the size of a goose quill, and from one to six inches long.

The Colon, or *large* intestine, is divided into the *ascending colon*, the *transverse colon*, and the *descending colon*.

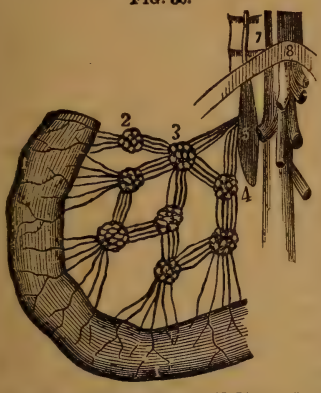
The Ascending Colon rises from the right haunch bone to the under surface of the liver, whence it bends inward, and crosses the upper part of the belly, below the liver and stomach, to the left side. This portion which crosses over is the *transverse* colon. From this point, on the left side, it turns down to the left haunch, and has the name of the *descending* colon. Here it makes a curve like the letter S, which is called the *sigmoid flexure*.

The Rectum is the lower portion of the large intestine, terminating at the anus.

The Lacteals are small vessels which begin in the villi, upon the mucous membrane of the small bowels. From here they pass between membranes of the *mesentery* to small glands, from which larger vessels run to another collection of glands; and after passing, for a space, from one collection of glands to another, at each stage of their progress increased in size and diminished in number, the lacteals pour

their contents into the *thoracic duct*. This having passed up through the diaphragm, out of the belly, makes a sudden turn downward and forward, and empties its burden into a large vein which ends in the right heart. Figure 30: 1, is the bowel; 2, 3, 4, the mesenteric glands through which the lacteals pass; 5, the thoracic duct; 7, the spinal column; 8, the diaphragm.

Fig. 30.



By the help of a magnifying glass, an infinite number of these small vessels may be seen starting from the rough, shaggy internal coat of the bowel.

The *mesentery* is a thick sheet of membrane, formed of several folds of the peritoneum, and spread out from the vertebræ like a fan. The bowels are attached to its edge, and are held by it in their place, and at the same time, have free motion. Between its layers are a great number of glands, which sometimes become diseased and swollen in childhood, and prevent the chyle from passing along to the thoracic duct. Thus affected, children are not nourished, and waste away with a disease sometimes called mesenteric consumption.

The Liver is a large gland, lying under the short ribs on the right side, below the diaphragm. It is convex on the upper surface and concave on the under, and is composed of several lobes. Its office is to secrete bile. It weighs about four pounds, being the largest organ in the body. Figure 31 represents the liver: 1, being the right lobe; 2, left lobe; 3, 4, smaller lobes; 10, gall bladder; 17, the notch into which the spinal column is fitted.

Fig. 31.

The Gall-Bladder lies on the under side of the liver, and receives, it is supposed, the surplus bile, which is reserved for special occasions. It opens into the gall duct, which carries the bile along, and pours it into the duodenum.

The Pancreas, Figure 32, is a long, flat gland, something like the salivary glands. It lies transversely across the back wall of the abdomen, behind the stomach. It secretes a fluid called the *pancreatic juice*, a peculiar kind of saliva, the office of which is to emulsion fat, so that the

Fig. 32.

lacteals can absorb it. This fluid is carried by a duct, and poured into the duodenum just where the bile duct enters.

The Spleen or *milt*, has an oblong, flattened form. It lies on the left side, just under the diaphragm, and close to the stomach and pancreas. It is supposed to be a reservoir for holding the surplus blood of the liver. It was thought by the ancients to be the seat of melancholy. The blood in passing through it loses a portion of its red globules.

The Omentum or *caul* is a doubling and extension of the peritoneum. It is a kind of fatty body, which lies upon the surface of the bowels, and is attached to the stomach. Its use seems to be to lubricate the bowels, and especially to protect and keep them warm. Hence it is often called the *apron*.

The Urinary System.

The organs of this system are devoted to separating the urine from the blood, and carrying it out of the body. These organs are the *kidneys*, the *ureters*, the *bladder*, and the *urethra*.

The Kidneys lie one on each side of the back bone, in the lumbar region, behind the peritoneum. They are four or five inches long, and two and a half broad. They are in shape like the kidney bean, and weigh about half a pound each. In the centre there is a bag called the pelvis, which tapers like a funnel, and forms the ureter which conveys the urine to the bladder. The texture of the kidney is dense, presenting in its interior, two structures, an external or cortical, and an internal or medullary. The cortical portion has the blood vessels, the medullary is composed of tubes which carry away the urine.

The Ureters are membranous tubes of the size of a goose quill, and eighteen inches long, which run down the back wall of the abdomen, behind the peritoneum, to the bladder, into each side of which they empty their contents.

The Bladder is located in the pelvis or basin, in front of the *rectum*. It is composed of three coats; the external is serous, the middle muscular, and the internal mucous. The external coat is strong and fibrous; the internal is drawn into wrinkles, which makes it thick and shaggy; it secretes a mucus which prevents it from being injured by the corrosiveness of the urine. The urine is retained in the bladder by means of a circular muscle, called a *sphincter*, which draws the mouth of the organ together. When the quantity of urine is so increased as to give some uneasiness or pain, this muscle, by a sort of instinct, relaxes and lets it out.

The bladder is attached to the rectum, to the hip bones, to the peritoneum, and to the navel, by several ligaments. In the female the bladder has the womb between it and the rectum.

This organ is wisely provided as a receptacle for the urine; which, without it, would produce great inconvenience by being constantly dribbling away.

The Urethra is a membranous canal which leads from the neck of the bladder. It is composed of two layers, a mucous, and an elastic fibrous. Through this channel, which is curved in its course, the urine passes out of the body.

The Respiratory Organs.

These organs consist of the *wind-pipe* (trachea); *divisions and subdivisions of the wind pipe* (bronchia); *air cells;* and the *lungs* or *lights.*

The Windpipe (trachea) extends from the *larynx,* — the seat of the voice, — to the third dorsal vertebra, where it divides into two tubes, called bronchia. It runs down the front part of the throat, with the œsophagus behind and between it and the spinal column. It is composed mainly of rings of cartilage, one above another.

The Bronchial Tubes are, at the division of the windpipe, two in number, but they divide and subdivide until they become very numerous.

The Air Cells or Vesicles are small, bladder-like expansions at the ends of the tubes. They are elastic, and swell out when the air passes in.

The Lungs fill the greater part of the chest, the heart being the only other organ which occupies much space in the cavity. The size of these organs is large or small, according to the capacity of the chest. Each lung, — for there are two, — is a kind of cone, with its base resting upon the diaphragm, and its apex behind the collar bone. They are concave on the bottom, to fit the diaphragm, which is convex on its upper side.

There are two lungs, a right and a left. These are separated from each other by a partition formed from the pleura, and called the *mediastinum.* Two portions of the pleura, coming off from the spine, form this partition; and the heart, covered by the pericardium, lies in the centre, between them. The right lung is divided into three lobes; the left into two.

Each lobe of the lungs is divided into a great many *lobules*, which are connected by cellular tissue. These lobules are again divided into very fine air-cells. Beside these, the substance of the lungs is composed likewise of blood vessels, and lymphatics, and is well supplied with nerves.

In the fetal state, before the lungs have been filled with air, they are solid and heavy, something like other flesh, but after all their cells have been filled with air, and breathing has been established, they are exceedingly light and spongy, and float upon water.

In cases where the murder of children is suspected, and where it is desirable to know whether they were *still-born*, or born alive and killed afterwards, the specific gravity of the lungs, compared with water, will often settle the question.

The Organs of Circulation.

The food having been digested, changed to chyle, absorbed by the lacteals, carried to the veins, poured into the right heart, sent up to the lungs, and prepared for nourishing the body, will still be useless, if not distributed to every part of the system. The organs for effecting this distribution, are the *heart*, the *arteries*, the *veins*, and the *capillaries*.

The Heart is placed obliquely in the chest, with one lung on each side, and is enclosed between the two folds of the mediastinum. Its form is something like a cone. Its base is turned upward and backward in the direction of the right shoulder; the apex forward and to the left, occupying the space between the fifth and sixth ribs, about three inches from the breast-bone. It is surrounded by a membranous case or sac, called the *pericardium*.

The heart is a muscular body, and has its fibres so interwoven that it is endowed with great strength. It is a double organ having two sides, a right and a left, which are divided from each other by a muscular partition, called a septum. The right heart sends the blood to the lungs; the left heart distributes it to the general system. Each side is divided into two compartments, an auricle and a ventricle.

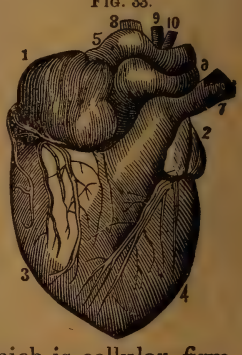
The Auricles have thinner walls than the ventricles, being only reservoirs to hold the blood until the *ventricles* force it along to other parts.

The Ventricles have within them fleshy columns, called *columnæ carneæ*. The walls of the left ventricle are thicker than those of the right, being required to contract with more force. Each of the four cavities will contain from one and a half to two ounces of blood.

The Tri-cuspid valves are situated between the auricle and ventricle on the right side, and consist of three folds of a thin, triangular membrane. The *mitral* valves occupy the same position on the left side. Small white cords, called *chordæ tendinæ*, pass from the floating edge of these to the columnæ carneæ, to prevent the backward pressure of the blood from carrying the valves into the auricles.

The pulmonary artery is the outlet of the right ventricle; the large artery, called *aorta*, of the left ventricle. At the opening of these arteries, are membranous folds, called *semilunar valves*. Figure 33 gives a fine view of the heart: 1, is the right auricle; 2, the left auricle; 3, the right ventricle; 4, the left ventricle; 5, 6, 7, 8, 9, 10, the vessels which bring the blood to and carry it away from the heart.

Fig. 33.



The Arteries are the round tubes which carry the red blood from the left side of the heart to every part of the body.

The sides of arteries are stiff and hard, and do not fall together when empty. They may often be seen open in a piece of boiled beef.

The arteries have three coats, — an external, which is cellular, firm

and strong; a middle, which is fibrous and elastic; and an internal, which is serous, and smooth, being a continuation of the lining of the heart. They are surrounded by a cell vestment called a *sheath*, which separates them from surrounding organs.

The Pulmonary Artery starts from the right ventricle in front of the opening of the aorta, and ascends to the under surface of the aortic arch, where it parts into two branches, sending one to the right, the other to the left lung. Having divided and subdivided to a great extent, they end in the capillary vessels, uniting, joining their mouths, and becoming continuous with the pulmonary veins just where they pass around the air-cells.

The Aorta is the largest artery in the body. It takes a slight turn in the chest, called the *arch of the aorta*, from which are given off the arteries which carry the blood to the head, etc.; thence it descends into the belly along the side of the back bone, and at the bottom of the abdomen it divides into two arteries, called the *iliacs* — one going to each of the lower limbs. The branches the aorta gives off supply red blood to every part of the body.

The Veins carry the dark or purple blood. Being made red and vital by meeting atmospheric air in the lungs, and then conveyed to every part of the body in the arteries, the blood loses its redness in the capillaries, and comes back to the heart in the veins, dark and purple, and unfit to support life. The veins are more numerous and nearer the surface than the arteries. They have, likewise, thinner walls, and when empty, they collapse or fall together. They begin in the small capillaries, and running together, they grow larger and larger, and finally form the great trunks which pour the dark blood into the right auricle. The veins are composed of three coats, similar to those of the arteries, with the exception of being thinner and more delicate. These vessels have valves all along their inner surface, to aid in circulating the blood.

The large vein which receives all the dark blood from above, and pours it into the right auricle, is called the *vena cava descendens;* the one which takes it from below, and disposes of it in the same manner, is the *vena cava ascendens.*

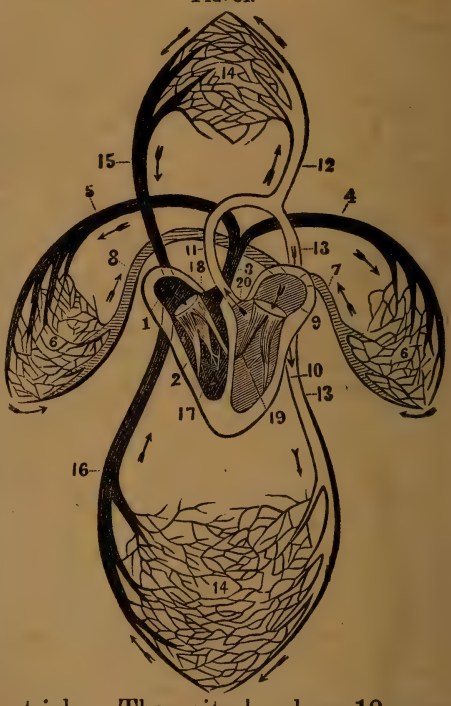
The pulmonary veins bring the *red* blood from the lungs to the *left* auricle, and thus are exceptional in their use, — being the only veins which carry red blood.

The Capillaries are the extremely fine net-work of vessels between the ends of the arteries on the one side, and of the veins on the other. They inosculate, or join their mouths to the very small arteries at one end, and to the equally small veins at the other. They are the industrious little builders of the human frame. Receiving the blood, red, and full of life, from the terminal extremities of the arteries, they take the living particles out of it, and apply them to the renewing and vitalizing of the body, and then pass it along into the hair-like beginnings of the veins, dark and bereft of vitality, to be carried up for

another freight of chyle, and to be again vitalized by being touched in the lungs by the breath of heaven.

In Figure 34 we have a good ideal illustration of the whole circulation. From the right ventricle of the heart, 2, the dark blood is thrown into the pulmonary artery, 3, and its branches, 4, 4, carry it to both lungs. In the capillary vessels, 6, 6, the blood comes in contact with the air, and becomes red and vitalized. Thence it is returned to the left auricle of the heart, 9, by the veins, 7, 8. Thence it passes into the left ventricle, 10. A forcible contraction of this sends it forward into the aorta, 11. Its branches, 12, 13, 13, distribute it to all parts of the body. The arteries terminate in the capillaries, 14, 14. Here the blood loses its redness, and goes back to the right auricle, 1, by the vena cava descendens, 15, and the vena cava ascendens, 16. The tricuspid valves, 17, prevent the reflow of the blood from the right ventricle to the right auricle. The semilunar valves, 18, prevent the blood from passing back from the pulmonary artery to the right ventricle. The mitral valves, 19, prevent its being forced back from the left ventricle to the left auricle. The semilunar valves, 20, prevent the backward flow from the aorta to the left ventricle.

FIG. 34.



By a careful examination of this diagram, with these explanations, the reader may understand the circulation very well.

The passage of the blood from the right heart, through the lungs, and back to the left heart, is called the *lesser*, or *pulmonic circulation;* its passage from the left heart through all parts of the body, and back to the right heart, is the *greater* or *systemic circulation.*

The Absorbent Vessels.

THE vessels which absorb the chyle from the small intestines, and convey it onward towards the blood, are the *lacteals.* They have been described. The veins are also supposed to have the power of absorption, particularly the small commencement of the veins. These have likewise been described.

The Lymphatic vessels resemble the lacteals. They abound in the skin, the mucous membranes, and the lungs. They are very small at their origin, and, like the veins, they increase in size, as they diminish

in numbers. Like the veins, too, they travel towards the heart, and their contents are poured into it. Their walls are composed of two coats; the external is cellular, and distensible; the internal is folded into valves, like that of the veins.

These vessels, on their way to the heart, pass through soft bodies, called *lymphatic glands*, which bear to them the relation that the mesenteric glands do to the lacteals. These glands are a collection of small vessels. The lymphatic glands are most numerous in the neck, chest, abdomen, arm-pits, and groins. They are also found, to some extent, in other parts of the body. Figure 35 shows a single lymphatic vessel, much magnified; Figure 36 exhibits the valves along one of the lymphatic trunks; Figure 37 shows a lymphatic gland, with the vessels passing through it.

FIG. 35.

FIG. 36.

FIG. 37.

FIG. 38.

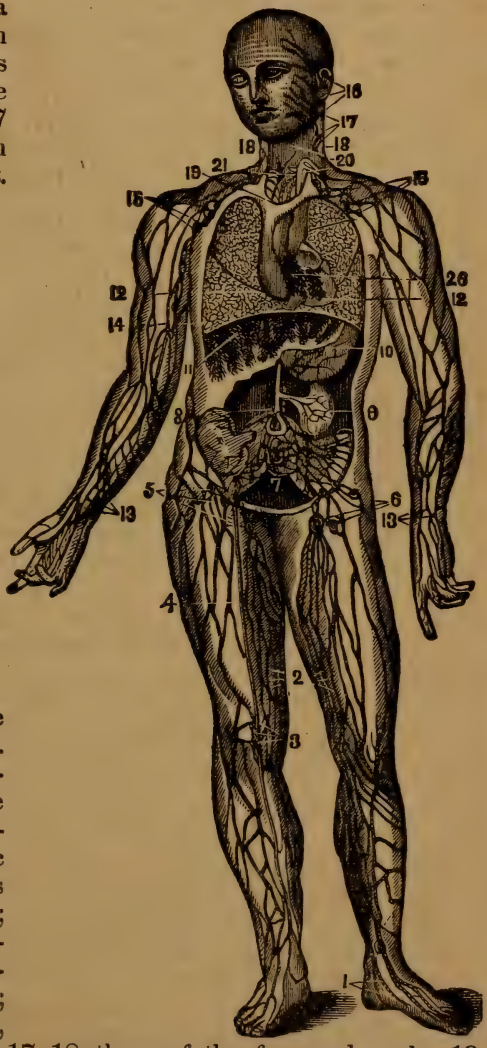


Figure 38 represents the lymphatic vessels and glands. 1, 2, 3, 4, 5, 6, show these vessels of the lower limbs; 7, the inguinal glands; 8, the commencement of the thoracic duct, into which the contents of the lymphatics are poured; 9, the lymphatics of the kidneys; 10, those of the stomach; 11, those of the liver; 12, 12, those of the lungs; 13, 14, 15, those of the arm; 16, 17, 18, those of the face and neck; 19,

20, the large veins; 21, the thoracic duct; 26, the lymphatics of the heart.

A cold will often cause lymphatic glands to swell. These swellings are called *kernels*. They often swell, also, without the irritation from cold, and become very much and permanently enlarged, particularly in scrofula. In scrofulous subjects they sometimes suppurate and break, forming bad sores upon the neck.

The Organs of Secretion.

The *exhalants*, the *follicles*, and the *glands* are the *organs of secretion*.

The Exhalants are the sweat-glands. These have external terminations upon the skin, thus communicating with the air, and internal terminations upon the surfaces of organs not having an outward exposure.

The Follicles are small sacs, located in the true skin and mucous membranes. The pores of the skin are the mouths or outlets of these little bags. Veins and organic nerves are sent to these vessels.

Glands are soft organs, having a variety of structure, and performing many kinds of secretion. A gland is made up of several lobules, united in one mass, and each of these lobules has a small duct communicating with a main duct which forms the outlet. Figure 39 shows a gland; 2, the small ducts spread through its body, and running together; 1, the large duct, through which the secreted substance is carried away.

Fig. 39.

The mesenteric and lymphatic glands merely modify the fluids which pass through them; others secrete from the blood either fluids to be used in the body, or such as are to be cast away.

The Vocal Organs.

No sounds touch the heart like those of the human voice, for no mechanic, however scientific and skilful, has ever been able to make an instrument which could produce sounds as beautiful, tones as varied, a timbre as melodious, and inflexions as manifold and agreeable. It has been compared to wind, reed, and stringed instruments. In touching expression, it is most resembled by the concert-horn, the bassoon, and the hautboy.

Vocal sounds, past all question, are produced in the *larynx*, but these sounds are *grouped*, or formed into articulate speech, by the pharynx, the nasal cavities, the tongue, the teeth, etc.

The Larynx is a kind of cavity or tube at the top of the windpipe, formed by the union of five cartilages, namely, the *thyroid*, the *cricoid*, the two *arytenoid*, and the *epiglottis*. Ligaments bind these together, and muscles move them.

The Thyroid Cartilage is composed of two parts, and has a connection with the bone of the tongue above, and with the cricoid cartilage below.

The Cricoid Cartilage is shaped like a ring, and hence its Greek name. It is narrowest in front, and broadest behind. It connects with the thyroid cartilage above, and with the first ring of the trachea below. Figure 40 gives a side view of the cartilages of the larynx: 1, bone at the base of the tongue (os hyoides); 2, the ligament connecting hyoid bone and the thyroid cartilage; 3, the front of the thyroid cartilage; 4, the thyroid cartilage; 6, the cricoid cartilage; 7, the windpipe.

Fig. 40.

Figure 41 is a back view of the cartilages and ligaments of the larynx: 1, is the back surface of the epiglottis; 3, 3, the os hyoides; 4, 4, the lateral ligaments connecting the os hyoides and the thyroid cartilage; 5, 5, the back face of the thyroid cartilage; 6, 6, the arytenoid cartilages; 7, the cricoid cartilage; 8, the first ring of the windpipe.

Fig. 41.

The Arytenoid Cartilages are upon the back part of the cricoid, and are connected with the thyroid cartilage by the vocal cords.

The Epiglottis is a fibro-cartilaginous lid, shaped like a leaf of parsley, which covers the upper opening of the larynx. It is connected by a cartilage to the bone of the tongue (os hyoides) and to the thyroid cartilage. Breathing opens and shuts it; and in swallowing, it closes down upon the top of the larynx, to prevent food and drink from passing down the windpipe.

The Vocal Cords are two ligaments, formed of elastic and parallel fibres, enclosed in a fold of mucous membrane. They are about two lines in width, and inserted behind into the anterior projection of the arytenoid cartilages, and passing forward, are fixed to the anterior angle of the thyroid. There are four ligaments crossing the larynx, two superior, and two inferior,—the latter being called vocal cords. The interval between them is the glottis. The ligaments themselves are sometimes called the *lips of the glottis*. The depression between the superior and inferior ligaments is the *ventricle* of the larynx.

Fig. 42.

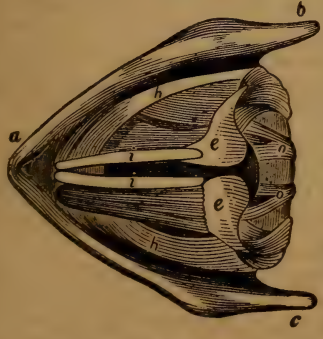


Figure 42 represents a view of the larynx from above: *a*, *b*, *c*, the thyroid cartilage, enclosing the ring of the cricoid; *h*, *h*, *e*, *e*, the

arytenoid cartilages connected by the transverse arytenoid muscle; *i*, *i*, the vocal cords; *o*, *o*, the crico-arytenoid ligaments.

The muscles which are attached to the cartilages, have the power of pulling them about so as to change in various ways the shape of the laryngeal cavity; to enlarge or diminish the size of the glottis; and to relax or tighten the vocal cords. By these means, and some others, the sounds of the voice receive their various modifications. Tightening the cords, for example raises the pitch.

The Skin.

The skin is a membrane composed of two layers, covering the entire person. The outer layer is the *scarf-skin* or *cuticle;* the inner is the *true skin* or *cutis vera.* These layers differ in their structure and uses.

The Scarf-Skin, called also *cuticle*, and *epidermis*, is a thin membrane, partially transparent, like a thin shaving of horn. Having no blood vessels or nerves, and consequently no feeling, it appears to be a simple covering to protect the true skin from injury by external agents. It is thickest on those parts most exposed to friction.

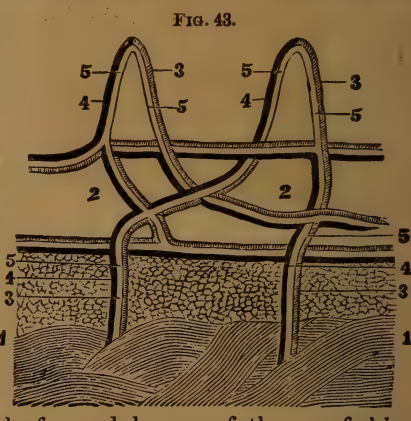


Fig. 43.

The scarf-skin is the production of the true skin, — an exudation from it in the shape of a fluid which is spread out as a thin layer, and *dries* up into flattened scales. The cuticle is composed chiefly of these scales, and is constantly being rubbed off as scurf, while new layers are forming underneath.

The lower, softer, and more newly-formed layers of the scarf-skin, are the seat of *color.* In this part, the cells contain a pigment, incorporated with the elementary granules, which gives to the various races their several shades of color. The depth of hue is dependent entirely on the amount of this coloring matter.

Some physiologists describe the skin as composed of *three* layers — reckoning this colored part of the cuticle as one, and naming it *rete mucosum*, or the *mucous coat.*

The True Skin, which is called *cutis vera*, and *corium*, is a kind of web, woven of small fibres collected into strands. In the upper portion, the web is fine and firm, but grows coarser below. Connected with its under surface is a fibrous web in which the fat is deposited. Upon its upper surface is the sensitive or papillary layer, composed of blood vessels and nerves, doubled into loops, which give little prominences called papillæ. Figure 43 gives an ideal view of these elevations, composed, as they are, of a nerve, an artery, and a vein, lying side by side: 1, 1, represent the true skin; 2, 2, the papillary

layer; 3, 3, the arteries; 4, 4, the veins; and 5, 5, the nerves of the papillæ.

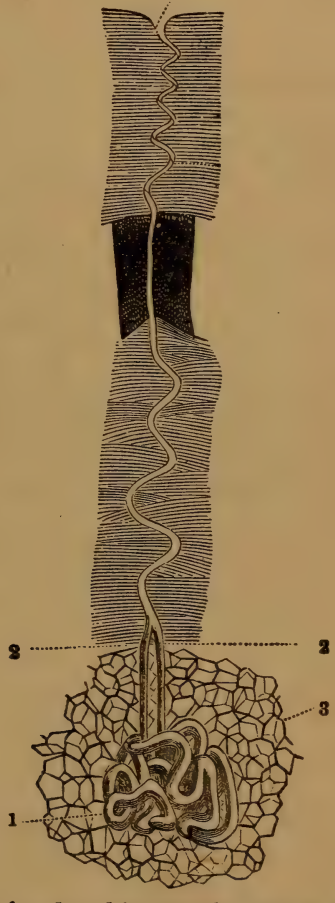
The arteries, veins, and nerves are spread over the true skin in great numbers, — so profusely, that it is impossible to push the point of the finest needle into it, without piercing a blood vessel and a nerve.

Figure 44 gives a view of the skin: *a*, *a*, the cuticle; *b*, *b*, the colored layer of the cuticle; *c*, *c*, *d*, *d*, the true skin; *e*, *e*, *e*, fat cells, *f*, *f*, *f*, sweat tubes.

FIG. 44.

FIG. 45.

FIG. 46.



The *lymphatics* are very numerous in the skin, beside which there are *oil glands* and *tubes*, and *sweat glands* and *tubes*.

The Oil Glands are imbedded in the skin, and communicate with the surface by small tubes. They are most abundant on the face, nose and ears. Figure 45 shows an oil gland, — *a*, being the gland, *b*, the tube, and *c*, its mouth.

The Sweat Apparatus consists of small tubes which pass down

through the true skin, and terminate in the meshes at the bottom, where it coils upon itself into a kind of bundle, called the *perspiratory gland.* Figure 46 gives one of these tubes, with the gland, magnified forty diameters: 1, being the coiled tube or gland; 2, 2, the two excretory ducts from the gland. These uniting, form one spiral tube, which opens at 4, which is the surface of the cuticle; 3, are the fat cells.

The hair and the nails are appendages of the skin.

The Nervous System.

The Nervous System consists of the *brain* and *spinal cord*, connected with each other, and called the *cerebro-spinal axis;* the *cranial nerves;* the *spinal nerves* and the *sympathetic nerve.*

The Brain is that mass of nervous matter lodged within the skull bones. It is made up of three parts, — the *cerebrum*, the *cerebellum*, and the *medulla oblongata.* These are nicely covered and protected by three membranes, the *dura mater*, the *arachnoid*, and the *pia mater.*

Figure 47 shows a considerable portion of the brain, — the skull bones and membranes being removed. The scalp turned down is represented by A, A; E, E, E, show the cut edge of the bones; C, is the dura mater, drawn up with a hook; F, the convolutions of the brain.

FIG. 47.

The Cerebrum is the upper and larger portion of the brain, and is divided into two hemispheres by a fissure. A portion of the *dura mater* dips into this cleft, and from its resemblance to a sickle, is called the *falx cerebri.* The design of this seems to be to support each half of the brain, and to prevent it from pressing upon the other half when the head reclines to one side.

The undulating surface of the cerebrum is produced by what are called *convolutions.* The lower surface of this organ is divided into three lobes, — the anterior, the middle, and the posterior.

The surface of the cerebrum is of a gray color, called *cortical*, or *cineritious;* the central portion is white, and is called *medullary.*

The Cerebellum is about one-sixth the size of the cerebrum. It lies just under the posterior lobe of the cerebrum, and is separated from it by an extension of the dura mater, called the *tentorium.* It is composed of white and gray matter; when the former is cut into, there is presented the appearance of the trunk and branches of a *tree*, called *arbor vitæ.*

The Medulla Oblongata is the top of the spinal cord; but being within the enclosure of the skull, it passes for a portion of the brain. It consists of three pairs of bodies, united so as to form a bulb.

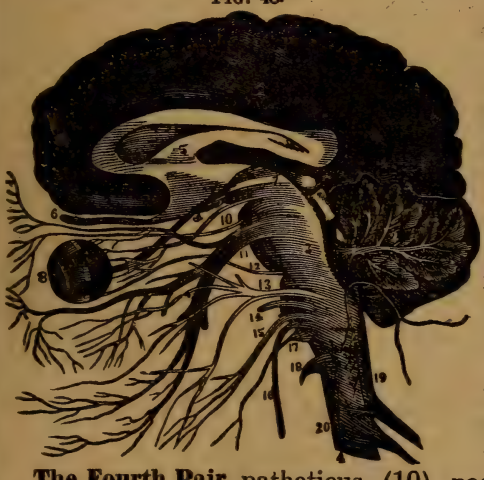
The Dura Mater is a strong, fibrous membrane which lines the skull and spinal column, and sends processes inward to support the brain, and forward, as sheaths for the nerves which go out from the brain and spinal cord.

The Arachnoid is a serous membrane, and like all other serous membranes, is a closed sac. It is reflected upon the inner surface of the dura mater.

The Pia Mater is a vascular membrane, and lies next to and invests the whole surface of the brain, — dipping into its convolutions. It furnishes nutriment to the brain.

The Cranial Nerves which go out from the brain are in twelve pairs. In reading a description of them, let the reader keep his eye on Figure 48.

FIG. 48.



The First Pair, olfactory (6), passes through several small openings in the ethmoid bone, and is distributed to the mucous membrane which lines the nose. Destroy this, and the sense of smell is gone.

The Second Pair, optic nerve, (7), passes through the base of the skull, and enters the cavity of the eye where it is expanded upon the retina. It is a disease of this nerve which occasions a gradual loss of sight, called *amaurosis.*

The Third Pair, motores oculorum (9), passes through the sphenoid bone to the muscles of the eye.

The Fourth Pair, patheticus (10), passes to the superior oblique muscle of the eye.

The Fifth Pair, trifacial nerve (11), like the spinal nerves has two roots, and divides into three branches, one going to the eye, forehead, and nose, and called the *opthalmic* branch; another going to the eye, the teeth of the upper jaw, etc., called the *superior maxillary;* and the third going to the ear, the tongue, and the teeth of the lower jaw, and called the *inferior maxillary.* It is a painful condition of the branches of the fifth pair, which constitutes the terrible neuralgic affection called *tic douloureux.*

The Sixth Pair, abducentes (12), passes through the opening by which the carotid artery enters the cavity of the skull, and goes to the external straight muscle of the eye.

The Seventh Pair, portio mollis (13), is distributed upon the internal ear.

The Eighth Pair, facial nerve (14), is distributed over the face. It sends nervous filaments to the muscles.

The Ninth Pair, glosso-pharyngeal nerve (14), passes through the same opening with the jugular vein, and is distributed upon the mucous membrane of the tongue and throat.

The Tenth Pair, pneumogastric nerve (15), sends its branches to the pharynx, larynx, stomach-pipe, lungs, spleen, pancreas, liver, stomach, and bowels.

The Eleventh Pair, spinal accessory nerve (16), connects with the ninth and tenth pairs, and is distributed to the muscles of the neck.

The Twelfth Pair, hypo-glossal nerve (17), goes to the tongue, and is its motion-producing nerve. It is a nerve of great energy in those who talk much.

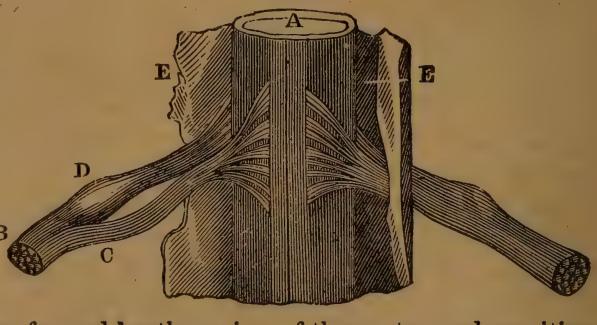
The Spinal Cord extends from the medulla oblongata, where it is in connection with the brain, down to the second lumbar vertebra. The upper end of the cord presents a bulbous swelling, or enlargement. Another swelling is found where the nerves are given off which go to the upper extremities; and a third near the end of the cord, where the nerves begin which go to the lower extremities.

Fissures dip into the cord before and behind, and divide it into two lateral parts, which are united by a thin layer of white substance.

These lateral columns are divided by furrows into *anterior*, *lateral*, and *posterior* columns; — the anterior being supposed to be the *motor* column, the posterior that of *sensation*, and the lateral divided in function between motion and sensation.

The Spinal Nerves, connecting with the cord, are in pairs, of which there are thirty-one. Each pair has two roots, — a *motor* root, C, Figure 49, arising from the anterior columns of the cord, and a *sensitive* root, D, springing from the posterior columns. A, is a section of the cord, surrounded by its sheath.

Fig. 49.



B, is the spinal nerve, formed by the union of the motor and sensitive roots. After the union, the nerve, with its motor and its sensitive filaments, divides and subdivides as it passes on, and is distributed to the tissues of the several organs.

The thirty-one pairs of spinal nerves are divided into eight pairs of *cervical*, twelve pairs of *dorsal*, five pairs of *lumbar*, and six pairs of *sacral* nerves.

Figure 50 gives a view of the brain and spinal cord, with the nerves given off by the latter: 1, 1, being the two hemispheres of the brain; 3, 3, the cerebellum; 4, the olfactory nerve; 5, the optic; 7, the third pair; 8, the pons varolii, so called; 9, the fourth pair; 10, the lower portion of the medulla oblongata; 11, 11, the spinal cord; 12, 12, the spinal nerves; 13, 13, the brachial plexus; 14, 14, the lumbar and sacral plexus.

FIG. 50.

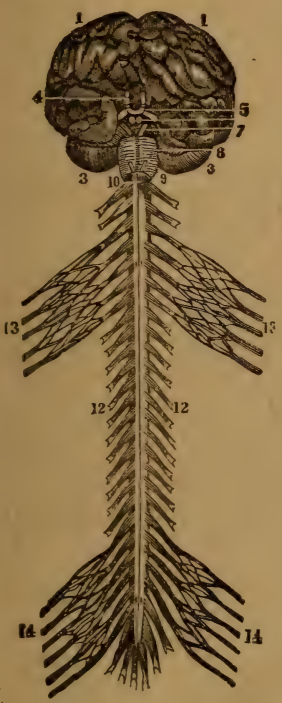
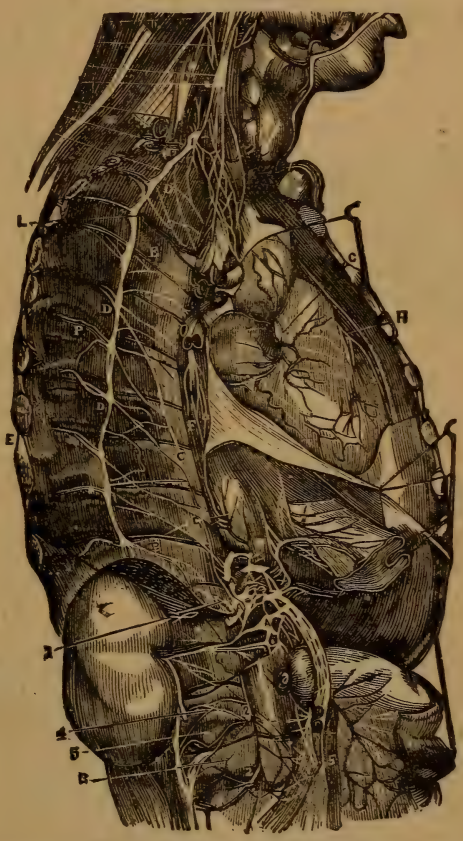


FIG. 51.



The Brachial Plexus is formed by the interlacing of the four lower cervical and upper dorsal pairs of nerves. It gives off six nerves, which are distributed to the muscles and skin of the upper extremities.

The Lumbar and Sacral Plexus is formed by the last dorsal and five lumbar nerves, from which nerves go to the muscles and skin of the lower extremities, and the last lumbar and four sacral, from which nerves are sent to the muscles and skin of the hips and lower extremities.

The Sympathetic Nerve consists of a series of *knots* (ganglia), lying along on each side of the spinal column, and forming a knotted chain. There is a knot for each intervertebral space, the neck excepted. These knots are composed of both cineritious and medullary matter.

Each knot is a distinct centre, and gives off branches upward, downward, externally, and internally. All the internal organs are supplied with branches from the sympathetic nerve. It is called the nerve of organic life, and is supposed to preside over nutrition, secretion, etc., as the nerves of the brain and cord preside over motion and sensation.

Figure 51 is a fine representation of the great sympathetic, with its knots, and connections with other nerves. A, A, A, is the semilunar ganglion and solar plexus, lying just under the diaphragm and behind the stomach. Its presence in this region is the reason why a blow upon the pit of the stomach sometimes destroys life. D, D, D, are the thoracic ganglia; E, E, the external and internal branches of the same; G, F, the right and left coronary plexus upon the heart; I, N, Q, the inferior, middle, and superior cervical ganglia; 1, the renal plexus around the kidneys; 2, the lumbar ganglion; 3, the internal branches; 4, the external branches; 5, the aortic plexus.

Fig. 52.

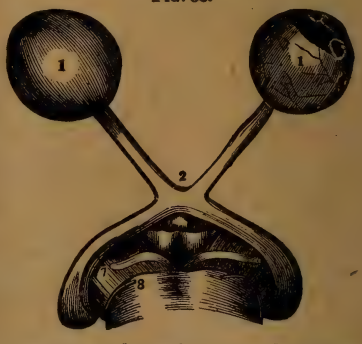
Figure 52 represents a plexus, showing how the filaments of one nerve pass to be enclosed in the sheath of another. In this way they change at once the direction of their journey, and their companions upon the way.

The Organs of Sight.

The organs of vision are the *optic nerve*, the *globe of the eye*, the *muscles of the eye*, and the *organs of protection.*

The Optic Nerve begins by two roots at the base of the brain, the fibres from each of which meet, as they come forward, and some of them cross each other. The two nerves then separate, and enter the back part of the globe of the eyes, and then spread out into a kind of membrane. In Figure 53: 1, 1, show the globe of the eye; 2, the crossing of the optic nerve; 3, the origin of two pairs of cranial nerves.

Fig. 53.



The Globe of the Eye is a better constructed optical instrument than man ever made. Its interior is filled with what are called refracting *humors* or *mediums*, which are surrounded and held in their place by membranes, called *coats.*

The Coats are the *sclerotic* and *cornea;* the *choroid*, *iris*, and *ciliary processes;* and the *retina.*

The Sclerotic Coat is a fibrous membrane, covering the largest portion

of the globe. To this the muscles are attached. It is the part which is called the *white of the eye*. It has a beveled edge in front, into which the cornea is fitted.

The Cornea is a transparent layer which projects in front, and forms about one-fifth of the globe. It is shaped like a watch glass. Its blood-vessels are too small to receive the red particles of blood.

The Choroid Coat is a vascular membrane. Its color is brown externally, and black within. It is connected with the sclerotic coat externally, and internally with the retina. It is composed of three layers.

The Iris is named from its having a variety of color in different persons. It is the partition between the anterior and posterior chambers of the eye, and has a circular opening in the centre called the *pupil*. Of its two layers, the fibres of the anterior one are radiating, and dilate the pupil, while those of the other are circular, and cause its contraction.

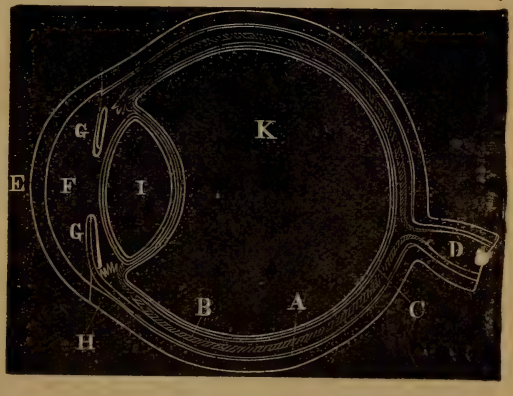
The Ciliary Processes are a number of folds formed from the internal layer of the choroid coat.

The Retina has three layers. The external is extremely thin; the middle is nervous, being an expansion of the optic nerve; the internal is vascular, and consists of a ramification of minute blood vessels.

The divided edge of their coats, may be seen in Figure 54, namely, the sclerotic, the choroid, and the retina; 2, is the pupil; 3, the iris; 4, the ciliary process; 5, the scolloped border of the retina.

FIG. 54.

FIG. 55.



The Humors of the Eye are the *aqueous*, the *crystalline*, and the *vitreous*.

The Aqueous or watery humor is situated in the chambers of the eye. It is an albuminous fluid, with an alkaline reaction, and a specific gravity a little greater than distilled water.

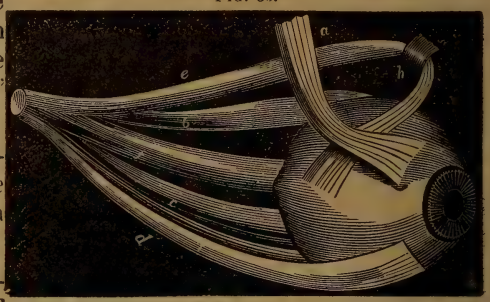
The Crystalline Humor is immediately behind the pupil. It is a *lens*, and is convex both on the posterior and the anterior surface.

The Vitreous Humor is also an albuminous fluid, something like the aqueous humor, but more dense.

In Figure 55 we have in E a good view of the cornea fitted into the sclerotic coat; A, is the choroid; B, the pigmentum nigrum; C, the retina; K, the vitreous humor; D, the optic nerve; I, the lens; C, the iris, painted on the back side with pigment; F, the aqueous humor.

The muscles of the eye, six in number, are attached to the bones of the orbit behind, and to the cornea in front, by their tendons. These tendons give the eye its pearly appearance. In Figure 56, five of the muscles are indicated by *a*, *b*, *c*, *d*, *e*; *f* is the optic nerve.

FIG. 56.



If the internal muscle be too short, the eye is drawn in towards the nose, and the squinting called "cross eye" is produced.

The Orbits are bony sockets which enclose the eye. The optic nerve passes through a large hole at the bottom.

The Eyebrows are the projecting arches above, covered with short hair. They prevent the sweat from running down into the eyes, and also shade them from strong light.

The Eyelids are the curtains which rise and fall in front. The smooth membrane which lines them is called the *conjunctiva*. It secretes a fluid which makes the eyelids open and shut easily.

The Lachrymal Gland is at the upper and outer angle of the orbit. Several small ducts open from it upon the upper eyelid, through which the tears run down upon the conjunctiva.

FIG. 57.

The Lachrymal Canals begin near the internal angle of the eye, by two small tear points, which communicate with the sac at the upper part of the nasal duct.

The Nasal Duct is a canal about three-quarters of an inch long, which runs down to the inferior channel of the nose.

Figure 57 shows these organs: 1, being the lachrymal gland; 2, the ducts leading to the upper eyelid; 3, 3, the tear points (puncta lachrymalis); 4, the nasal sac; 5, the termination of the nasal duct.

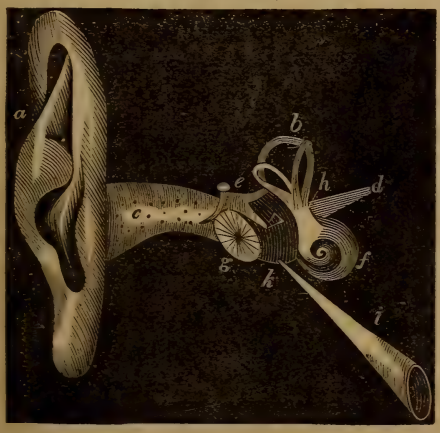
The Organs of Hearing.

The External Ear is composed of the pavilion of the ear (the pinna), and the auditory canal (the meatus auditorius externus).

The Pinna surrounds the entrance to the auditory canal. It stands out from the head, and is in common language called the ear.

The Meatus Auditorius is a canal about an inch long, partly bony and partly cartilaginous, which goes from the pavilion of the ear to the *drum of the ear.*

Fig. 58.



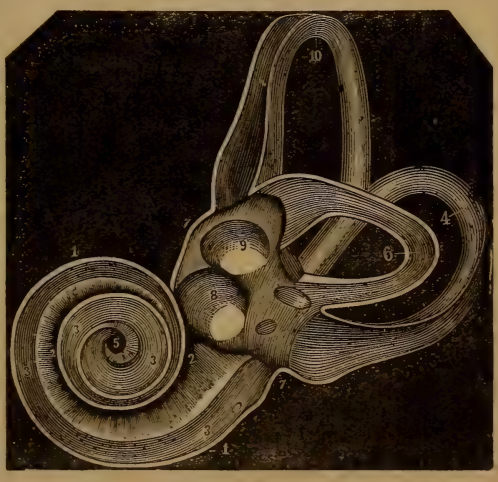
The Drum of the Ear (membrana tympani) is an oval-shaped thin membrane, inserted into a groove around the auditory canal.

The Tympanum is a cavity within the temporal bone.

The Eustachian Tube is a channel of communication between the tympanum, and the upper part of the pharynx. The object of this is to convey air to the drum of the ear, as without air, no sound can be produced.

The Labyrinth is a series of chambers through the petrous bone, — embracing the *vestibule* a three-cornered cavity within the tympanum; the *semi-circular canals,* communicating with the vestibule, and the *cochlea,* which makes two and a half turns around an axis, called the *modiolus.*

Fig. 59.



In Figure 58, *a*, is the pavilion of the ear; *c*, the auditory canal; *g*, the membrana tympani; *k*, the tympanum; *e*, the bones of the ear; *b*, the semicircular canals; *f*, the cochlea; *h*, the vestibule; *i*, the eustachian tube; *d*, the auditory nerve.

In Figure 59, we have a view of the labyrinth laid open, and highly magnified: 1, 1, being the cochlea; 2, 3, the channels that wind around the central point (5); 7, 7, the vestibule; 8, the foramen rotundum; 9, the fenestra ovalis; 4, 6, 10, the semicircular canals.

PHYSIOLOGICAL LAWS OF LIFE AND HEALTH....HYGIENE.

Life, the Infancy of Being.

It may be stated as a general truth that man has but just learned to live when he is ready to die. We expend a large portion of our lives in searching out our mistakes, and in striving to undo the mischiefs they have occasioned. This is true in reference both to our moral and our physical life; and I draw from it the conclusion that the present must be only the infancy of our being, and that our blunders and consequent sufferings here, will cause us, in the great hereafter, to place a higher value upon knowledge, and to struggle with new fortitude to rid ourselves of every bondage.

A life which has just begun to take shape and symmetry, cannot be permitted, I think, under the rule of a benevolent Creator, to become extinct. We shall certainly be permitted to take up the broken thread of life, and, in the clearer light of the future, with the warning experience of the past, and surrounded by better guards, to try again. In the mean time, while here, the sooner we become acquainted with the laws of life, and the better we obey them, the more we shall enjoy.

The Nervous System.

Man is brought into connection with the outward world through the senses of feeling, seeing, hearing, etc. These communicate with the brain and mind through the nerves of sensation.

The nervous system is divided into two great central portions, the brain and the spinal cord; and these together are called, by the learned, the *cerebro-spinal centre.* There are numerous pulpy white cords, called nerves, which at one end are connected with this great axis or centre, and from thence run to all parts of the system. A portion of these nerves start from the base of the brain and run to the eye, the ear, the tongue, etc. (Fig. 48.); while another, and a larger part spring from the cord which runs through the back-bone, and are distributed over the body, and the lower extremities. (Figs. 50 and 60.) One portion of these cords produce feeling; another part, motion. The former we call sensitive; the latter, motor. Both kinds are widely distributed over the body. Those which spring from the spinal cord have two roots, one uniting with the *back*, the

other with the *front* part of the cord. Cut off the back root, and the part to which it is distributed loses its feeling. As we say in common language, it becomes *numb*, though it may *move* as well as before. Cut the front root, which is motion-producing, and the part to which it goes cannot move. It is *palsied*, though it may still feel acutely. The numerous nerves that spring from the spinal column are pretty well represented in cut 60.

Fig. 60.

If the cranial nerves of motion which go to the face be cut, no emotion or passion can be expressed. The features will all be immovable, like statuary. To smile, to laugh, to frown, to give expression to the feeling of pity, or anguish, or love, is alike impossible. And yet a breath of air upon the face will be *felt* as readily as before. Paralysis, or palsy, as it is called, partial or general, is the result of injury upon few or many of these motion-producing nerves. Neuralgia, tic douloureux, etc., arise from some disease, perhaps inflammation, of the nerves of sensation.

How the Mind Gets Knowledge. — Everything the mind knows of the external world, it learns through the organs of sense, which communicate with it through these nerves. Thus, the nerves are acted on by external agents, and then they act on the brain and cause sensations. When the hand is burned the nerves of sensation run with the intelligence to the brain, which, quick as thought, through the nerves of motion, despatches orders to the muscles to repel the injury.

Comparison. — The arrangement and operation of the nervous sys-

tem are like those of the electric fire-alarm system of Boston. The brain is the intelligent centre, like the central office at City Hall. The nerves of sensation which carry to the brain, with electric speed, intelligence of what is going on outside, are like the wires which run to the City Hall from the several station-boxes. The quick carrying to the brain of any information of injury done to some part of the body, is like sending to the City Hall from a station-box the intelligence of fire in one of the districts. The rapid transmission of orders from the mind to the muscles, is like flashing the alarm over the wires to every part of the city. And, finally, the powerful action of the muscles in warding off danger, is like the dashing of firemen over the pavements, and the energetic plying of the engines.

Sensations.

An effect, produced on the mind through a nerve, is called a *sensation.* Hunger is a sensation. It is an effect produced upon the mind through a certain nerve by the condition of the stomach. Thirst, pain, heat, cold, are sensations in a similar sense. Nausea is a sensation produced by some injurious substance acting upon the coats of the stomach.

Strength of Sensation. — Some sensations are much stronger than others; some are very intense. A very strong sensation is called a feeling. It is common to say, "I feel cold," or, "I feel hot." We simply mean by this, that the temperature of the weather makes a very powerful impression upon us.

Kinds of Sensation. — Sensations are either pleasurable or painful. Pleasurable sensations arise from the proper exercise of some healthy part of the body; and they are a suitable reward for any care the mind may take of the corporeal organs.

The sensations arising from a proper amount of exercise are pleasurable. The muscles find a sort of enjoyment in action. He who leads a sedentary life, either from choice or necessity, loses much enjoyment. Hence there is pleasure in labor; and the working man, though often pitied by the wealthy, is generally the happiest of men. The eye and the ear, when directed to agreeable sights and sounds, derive the most agreeable sensations from exercise. The air of a beautiful spring morning gives impressions which none can describe, but which all know to be delightful. These impressions are well fitted to reward us for taking at that season, in the open air, the exercise we so much need.

Moral Uses of Sensations. — How little we reflect upon the amount of happiness it is in our power to create by making agreeable impressions upon others. A civil and polite address makes a pleasant impression. A kind word, fitly spoken, makes the heart glad. Heads of families might do much to increase the happiness of their domestics in the kitchen by meeting them with a pleasant countenance, and dropping in their ear, now and then, a word of approval. Such little

acts of benevolence are easily performed, and they make the most agreeable and lasting impressions upon persons in the lower stations of life, — creating attachments, in fact, which end only with death, and which in hours of future sorrow, which come to all, may refresh us like springs of water in the desert.

> Full many a shaft at random sent,
> Finds mark the archer little meant;
> Full many a word at random spoken,
> May heal a wounded heart that 's broken.
>
> WALTER SCOTT.

In aiming to make agreeable impressions upon domestics, we should be governed by the simple desire to create happiness. Their sources of happiness are comparatively few. They spend their days below-stairs, — shut out from a portion of the light of day, and from the refining influences of the drawing-room, — having little time for rest or for recreation. How unfeeling to treat such persons with harshness, to wear a frowning face in their presence, and thus wither the few flowers of happiness which bloom around them!

Every human being is endowed with the beautiful nervous organism of which I have spoken, and is daily receiving impressions, pleasurable or painful, from thousands of sources. In all the relations of life, it should be our aim to touch delicately this sensitive structure. Wives may add much to the happiness, and I may say, to the affection of their husbands, by always wearing a pleasant face; and the heart of the wife may be made light and glad by gentle words from the husband. We cannot but love those who make pleasurable impressions upon us, and we necessarily dislike such as impress us painfully. Most of the coldness and alienations which grow up between the heads of families, spring from the habit, of one of the parties, of saying, or doing, or looking something which painfully impresses the other. A woman who habitually wears a "sour" face, cannot be loved either by her husband or her children. The man or the woman who desires to be loved, must cultivate a manner, a look, a speech, a life, the whole scope of which is fitted to make pleasurable impressions upon others. It is against nature to love what gives us pain.

Agreeable Sensations, a Source of Health. — Pleasurable sensations not only beget love, and increase happiness, but they add much to health. They exhilarate the spirits and drive away melancholy. Travelling promotes health and prolongs life, by the number and variety of the pleasing impressions it makes upon the mind.

Care of the Sick. — If the above statements be correct, how important that the sick should be so dealt with as to have none but agreeable sensations made upon them. *Many a life has been sacrificed to the peevish temper of a nurse.* When the nerves are weak from disease, even slight causes make powerful impressions; and if these impressions are of a painful kind, the results are most deplorable. To treat harshly the sick, especially those whose nervous system is broken, implies either great thoughtlessness, or extreme cruelty. A

single harsh word, which would scarcely move one when well, may send the same person, when sick, almost to distraction. Every word spoken to persons in sickness should, therefore, be gentle and soothing. Every feature of the face should express either cheerfulness, or tenderness and pity.

As the painful impressions, which disease is making, tends to depress the spirits and create melancholy, it is not expected that persons when sick will exhibit as amiable tempers as when well; and for this, all due allowance must be made.

Effect upon the Disposition. — This leads me to say that pleasurable sensations improve the temper and disposition. This is a fact of very great importance, and parents should never lose sight of it in dealing with their children. There are few children but would grow up amiable and useful members of society, were they dealt with in the gentle and tender manner which their young and impressible natures require. From the moment the young mind wakes to intelligence, it will be occupied with something. Parents and guardians should aim, therefore, to turn it to all those things which will impress it pleasantly, and at the same time do it no harm. Exercise, songs, playthings, flowers, — to the and other entertainments it should be led by gentle hands. No thoughtful parent will ever pain a child by harsh threats and denunciations, or shock it by an oath.

Bad Effect of Unpleasant Sensations. — If pleasurable sensations improve the health and temper, unpleasant ones do just the opposite. They break down the health, and spoil the disposition.

They are intended to give us a warning of impending injury. Thus, we have painful sensations when we have overworked the body or mind. The sensation of weariness tells us that the muscles have worked as long as their good requires, and that they need rest. Were this sensation unheeded, exhaustion and entire prostration would be the result.

When fatigue begins to be felt, either of body or mind, the sensation may be dissipated by strong tea, or intoxicating drink, or opium; but to drive it away in this manner, for the purpose of working longer, is wrong, and leads, in the end, to disease or exhaustion. It is said that one of the most brilliant advocates of our time is dependent upon opium for the stimulus to carry him through his extraordinary flights of eloquence; but his restless motion and nervous face remind us that he has bent his bow very nearly to the snapping point, and that a sudden collapse of his vital powers, at no distant day, may be feared as the result of such tension.

Persons in affliction, whose spirits are depressed and broken by sorrow, should have their thoughts turned away from all sombre objects and contemplations. They should be taken into the open sunlight, and be diverted by the beautiful things of nature. They should visit cheerful society, and open their hearts to pleasurable impressions.

When we permit any part of the body to remain idle, neglecting to use it as much as we ought, unpleasant sensations remind us of

our fault. The muscles, when unused, waste away and become feeble. This is sure to produce an uneasy, nervous state of feeling, which says to us as plainly as a sensation can, that the muscles are hungry for exercise, and that it is injurious to let them rest longer.

Need of a Healthy Brain. — In order that we may get correct ideas of the external world, it is necessary that the brain, the nerves, and the organs of sense through which sensations are made upon the mind, should be in a healthy condition. It is evident that if the instruments of sensation be diseased, the sensation cannot be natural, and will make a false report to the mind. It is of the highest importance, therefore, that the brain should be sound.

Improper Intermarriages. — This organ, like every other, may inherit disease from parents. Insanity, which springs from a diseased brain, is often hereditary. When both parents are diseased, the offspring are of course more liable to partake of their defects. Among the wealthy, and particularly among the royal families in Europe, nervous diseases and sterility are very common. This arises, in a great part, from intermarriages among blood relations, — a practice under which any people will degenerate, and finally perish. The wisdom of the Old Testament prohibition of marriage within certain degrees of consanguinity, has been established by the observations of philosophers, and the experience of mankind. When a man commits the folly of marrying his first cousin, he generally either has no issue, or his children are afflicted with deafness, or some shocking form of nervous disease. Let those who will transmit to their descendants a sound mind in a sound body, observe the laws of life, and avoid all marriages with blood relations.

Need of a Good Supply of Blood. — For a proper performance of its duties, the brain requires and receives a larger supply of blood than any other part of the system. One tenth of all the blood goes to this important organ. If the quantity or quality be materially lessened or changed, great disturbance of the brain follows. A large loss of blood occasions dizziness and fainting. If an atmosphere charged with too much carbonic acid gas be breathed, as in a deep well, the blood is not vitalized in the lungs, so as to sustain the brain, and unconsciousness soon follows. If the air be vitiated in any way, or have its oxygen extracted, as in large assemblies, where it is breathed over several times, it becomes unfit to support the brain, and the result is languid feelings, inability to apply the mind, headache, fainting, hysterics, and other nervous manifestations.

Ventilation. — This shows the great necessity of having dwellings, churches, and school-houses well ventilated.

Were a good system of ventilation adopted in all our churches, ministers would seldom preach to sleeping audiences. A congregation sitting in one of our places of public worship, where the air in a single afternoon is as many times used over as the minister's sermons are in a lifetime, can neither hear with attention, nor comprehend with clearness.

In our school-houses, the ventilation is quite as bad, and the consequences worse, because they are occupied six hours in the day instead of three, and six days in the week in place of one. In the small school-houses which our children filled to overflowing in former years, in which there was *no* ventilation, unless they happened to be blessed with an old-fashioned chimney and fire-place, the effects upon the nervous system of the children was deplorable. Many of the diseases which afflict the present generation of men and women, had their origin in the bad air of those crowded nurseries of education.

Our dwellings were partly ventilated in olden time, when the open fire-place received the "back-log," the "top-stick," the "fore-stick," and other sticks to match; but since we have been warmed by the stove and the furnace, we have known little of the luxury of pure air at the domestic hearth.

Need of Exercise for the Brain. — Health requires that the brain should be properly occupied with vigorous thought. The same reasons may be given for this as for the exercise of the muscles. It is governed by the same laws which apply to other parts of the system. Use improves its strength and vigor, — idleness causes it to grow feeble. Of course the labor it is put to should be only reasonable in amount, and should not be too long continued at any one time. With the weakening of the brain, the whole bodily forces, and indeed the whole mental and moral character, fall into feebleness and decay. It is a great mistake to suppose that the cultivation and even vigorous use of the mind, impairs health and shortens life. Just the opposite is true. Many of the most eminently intellectual men, who have worked their brains hard all their lives, have been distinguished for long life.

Bad Effects of Change in Circumstances. — No class of persons suffer more from nervous diseases and general ill health, than those who, having worked hard in early life, with little or no cultivation of the mind, are suddenly raised to wealth, and immediately drop all exercise, and fall into habits of indolence and luxury. The condition of such persons would be much less pitiable, did they take up books when they lay by the hoe or the broom. But they seldom do this. Many a woman, in early life, has felt the glow of health in every limb, and a thrill of pleasure, too, while scrubbing the floor upon her hands and knees, who has, in subsequent years, reclined in misery upon her damask-covered lounge, and wondered that she could not have the health of other days. Let her cultivate her brain, live temperately, and exercise in the open air, and life may again have real pleasures for her.

Discretion in Exercising the Brain. — In exercising the brain we must use discretion. We must not sit down in the morning, and ply it with work during the whole day, without rest. This would soon bring upon it disease, or premature decay. It should be worked only until it begins to show symptoms of fatigue. Then it should be permitted to rest; or, what is better, be turned to some new subject, of

a lighter, or a different character. This often rests the brain better than to entirely suspend its action.

Overworking the Brain in Childhood. — Great care should be used not to exercise the brain too much in early life. Like other parts of the system, it is tender in childhood, and will not bear prolonged exertion. As a general thing, children are put to school too early, and made to work their brains too hard. Great mischief arises from this source. Children are born with larger brains now than formerly; and it is no uncommon thing to see upon a child of ten years, a head equal in size to that of an adult. Children run to brain. Precocity in development of brain and mind is common. The results of stimulating and hastening the unfolding of such minds are deplorable. In such children, the brain should be the last thing to be cultivated. We need not urge its growth. It will come forward fast enough in spite of us. Our chief aim should be to harden and fortify the general constitution, so that the noble brain which it is required to bear up and sustain, may long be its crown and glory.

Yet parents are proud of their precocious children, and often reverse this rule. They do it thoughtlessly, and would be terribly startled, could they suddenly look into the future, and see the results of their folly. Could they do so, they would see inflammation and softening of the brain, epilepsy, insanity, paralysis, apoplexy, with all the horrors of undescribed and indescribable nervous affections, which, though without a name, have a terrible reality.

Old People's Brains. — Persons in advanced life should be particularly careful not to overwork the brain. In middle life it recovers easily from great fatigue. In the decline of life, its powers of recovery are feeble. A single exhaustion may cause its fatal collapse. Old age should be distinguished for gentleness and moderation. The journey of the down-hill of life should be made by short and easy stages, through regions of diversified beauty.

A Supply of Blood. — Every part of the system, when hard at work, needs and must have a very large supply of pure blood. Without this, it is torpid and inactive. To cause the blood to flow to any particular part, it must be exercised. The lumberman, when in the forest in extreme cold weather, stamps his feet violently upon the ground, or beats them against a log, and whips his hands around his body; and in this way makes them red and warm with a new supply of blood. The stomach, when it has received a supply of food, begins earnestly to turn it over; and by this exercise, and the stimulus which the food supplies, it invites large quantities of blood to its vessels, and thus increases its power to work. But just in proportion that it draws the vital current to *itself*, and augments its *own* vital force, it diminishes the blood in *other organs*, and, for the time being, unfits them for work. The same may be said of the brain and all other working organs.

From this it follows that only one organ, or set of organs, can work effectively at the same time, and that it is improper to put the brain to hard work immediately after a full meal, because the stomach then

wants the blood to enable it to digest the food; and if the blood be called off to the brain, digestion will stop. Nor should the stomach be loaded with food directly after long and hard thinking; for the brain will yield up the blood to it only after its own excitement has had time to subside.

Sympathetic Nervous System.

The object of this system seems to be to bind all parts of the body together, and to combine and harmonize their actions. It takes care that no part of the system acts in such a way as to injure any other part. It exerts a controlling influence over digestion, nutrition, absorption, the circulation, etc. These are natural processes which need to go on while the brain is asleep and cannot attend to them. The nervous system, of which I speak, presides over all those functions which are called involuntary, — so called because no act of the will is needed for their performance. Secretion, absorption, digestion, and the circulation of the blood, all have to go on while we sleep, as well as while we wake. Were an act of the will necessary to their performance, as in walking, eating, conversing, etc., then they would have to cease the moment the brain fell asleep, and death would be the result.

The sympathetic nerves apprize each part of the system of the condition and wants of every other part. When the lungs are inflamed, the stomach seems to be aware of it, and will receive no food, because this would aggravate the disease of the neighboring organs. Well would it be if human beings would exercise a like forbearance, and abstain from those acts of self-gratification which they know will injure their neighbors.

Effects of Nervous Diseases. — Before closing these observations, I wish to add a few words respecting the terrible effects of nervous diseases which characterize the present time.

That they are far more numerous and afflictive than in former years, must be apparent to the most careless observer. They are nothing more nor less than the price we pay for a high civilization, and especially for our republicanism. Among us, every man feels his individuality, and has a motive for thinking and doing his best. Thought and action are here unfettered; and if the race is not to the swift, nor the battle to the strong, every man acts as though he thought it was. The great excitement which the struggle for wealth kindles and inflames, deranges and shatters the nervous system to a shocking degree.

And wealth, when obtained, does its full share to weaken the nerves. It brings with it high living, indolence, loss of energy, dissipation, and a weakening of the whole moral and physical powers. It *need* not do this; but, in most cases, it does.

The result is, that, at least, every other person has some nervous disease, which makes life a misery rather than a blessing. The brain and nerves are too much developed in comparison with the develop-

ment of the muscles. Half our boys and girls have heads as large as men and women. It is common to see a boy or a girl at ten talking and acting like a man or woman. I do not mean by this, that they imperfectly imitate the actions of older persons. It seems to be natural to them. Their brains are prematurely developed, and their acts and thoughts have the maturity of adult life.

What is Coming? — What will be the result of this state of things, no man can predict. I sometimes think the race will break down; that that which was intended to be its ornament and strength, will be its destruction. I hope not. Yet there is danger of it. Nothing can save us but the wisdom to adopt such means as will develop all parts of the system alike. No race of men can stand for many generations such a strain upon the nervous system, unless better means are adopted to counterbalance its evil effects than are now used in the United States. We have got to pause in our swift career, and look after our health, or we shall become a nation of maniacs. No proof is needed of what is here said. There is scarce a man or a woman but has in their own person the foreshadowing evidence of our impending doom.

Hopeful Considerations. — It is proper to say the considerations here presented, terrible as they are, are mitigated in some measure by others of a more hopeful character.

Physiology and the laws of life are now better understood than at any former period. These subjects are getting into our common schools, and are engaging the attention of our youth. Declining health has already made us think more of the means of preserving it, — such as diet, exercise, bathing, travelling, and amusement. To encourage and intensify this hopeful direction of the public mind, I propose to devote a few pages to these subjects.

Food and Digestion.

From the earliest dawn of existence to the last moment of life, our bodies are constantly changing. Old particles of matter, when they are worn out, leave their places and are thrown out of the system. Were this the whole of the matter, our bodies would soon waste away, and that would be the end of us. But as fast as the old materials are thrown away, new ones take their places; and it is solely out of our food that these new materials are formed.

In order that the food may be well digested, it must first be broken into small particles in the mouth. The act of chewing it, is called mastication. During this act, if it be well performed, a large quantity of spittle, called saliva, flows out of a number of glands, called salivary glands, and mixes with the food, forming with it a soft mass. In this condition, it is thrown backward into the top of the throat, called the pharynx. Here, a little cartilage, called the epiglottis, drops down upon the opening into the top of the windpipe, and prevents its entrance into the breath passage; and it is pushed along into the gullet, a tube which runs down behind the windpipe and lungs, and which

physicians call the œsophagus. Here a succession of muscular bands, in circular shape, contract upon it, one after another, and force it down into the stomach.

It is important that two things should be secured while the food is in the mouth, namely, that it should be reduced to a good degree of fineness by chewing, and that a proper amount of saliva should be mixed with it. If the chewing were not necessary, teeth would not have been given us; and the salivary glands would certainly not have been put in the vicinity of the mouth, if the mixing of water with our food would serve the purposes of digestion as well.

Eating too Rapidly.—The Americans have fallen into a pernicious error in eating their food too rapidly. Time is not given to chew it sufficiently to excite a full flow of saliva; and as it cannot be swallowed in a dry state, it is not uncommon to see persons taking a sip of water after every second mouthful to enable them to force it into the stomach. It is a habit we Americans have of cheating ourselves both of the pleasures and the benefits of eating; for the only real pleasure of eating arises from the flavor of food while retained in the mouth, and the only benefit we can derive comes in consequence of its proper digestion.

The food when received into the stomach is in the same condition as when taken into the mouth, except that it is, or should be, ground fine by the teeth, and well mixed with saliva.

The Gastric Juice. — The stomach, like the mouth, the windpipe, and the gullet, is lined by a mucous membrane. The chief office of this membrane is to secrete, or take out of the blood, a fluid which we call gastric juice, which means stomach juice; for the Greek name of stomach is γαστήρ (gaster). This fluid has not much smell or taste, and looks like spring water. It has a powerful effect upon food, which, when mixed with it, soon undergoes an important change, which is apparent to the taste, the smell, and the sight. What the nature of the gastric juice is, or how it produces its effect upon food, is not certainly known.

Too Much Cold Water at Meals.— There are some interesting facts connected with the formation of this fluid, of which it is important that every person should be apprized.

Its quantity and quality depend on the amount and healthfulness of the blood which flows to the stomach during the first stage of digestion. It is, therefore, injurious to drink large quantities of very cold water with, or immediately after, our meals; as this will chill the stomach, and repel the blood from its vessels, so that but little of the juice can be formed. Digestion, in such case, must be imperfect.

This Fluid not Secreted Without Limit. — This fluid does not flow into the stomach continuously, but only when we swallow food, and then, not as long as we please to eat, but merely till we have taken what the system requires. If, in the amount we take, we go beyond the wants of nature, there will not be fluid enough formed to dissolve it, and the whole will be imperfectly digested, and be a source of in-

jury rather than benefit. This should teach us to be careful that our food be only reasonable in amount.

Not Secreted in Sickness. — When we are sick, the gastric juice is either not formed at all, or only in small quantities. Whatever may be our feelings of lassitude, and however much we may appear to need food, at such times, it is useless to take it, for it cannot be digested, and will only aggravate our disease. If the illness be only slight, the fluid will be formed to some extent, and food may be taken in proportion.

Its Secretion Favored by Cheerfulness. — A cheerful disposition, and a happy, lively frame of mind, are highly favorable to the production of the gastric juice; while melancholy, and anger, and grief, and intense thought of business at the hour of meals, greatly hinder its natural flow.

This should teach us to go to our meals with light hearts, and to make the family board a place of cheerful conversation, and of a light and joyous play upon the mirthful feelings of all present. Should any of the family circle be in the habit of using vinegar as a condiment, we should never be guilty of compelling them to extract it from our faces. A vinegar face is not easily excused anywhere; at the table it is unpardonable. A single countenance of this description will throw a gloom over a tableful of naturally cheerful persons; and if habitually present at the board, may finally spoil the digestion of half a dozen, and entail dyspepsia upon them for life.

The stomachs of the sick pour out but very little of this fluid, and they can take but a small amount of food. It is cruel to deprive them of the powers of digesting that little by treating them harshly, and filling them with gloomy and desponding feelings. I therefore repeat the substance of the advice given on a previous page: Deal gently with the sick.

How all this is Known. — As the stomach is wholly concealed from view, the reader will very naturally ask how it is known that the gastric juice is poured into it in certain states of the mind, etc., and withheld in others. It certainly could not have been so accurately known, had it not been for an accident which opened the living and working stomach to the inspection of Dr. Beaumont, a United States Surgeon. A young man by the name of Alexis St. Martin, a Canadian by birth, but then in the State of Michigan, had a large part of his side torn away, and a hole of considerable size made into his stomach, by the accidental discharge of a gun. To the surprise of his surgeon, St. Martin recovered; and the edges of the wound in the stomach refused to grow together, preferring rather to fasten themselves to the borders of the breach in the side, thus leaving the passage open. A kind of curtain grew down over this, which prevented the food from falling out. Dr. Beaumont, taking advantage of this state of things, instituted a series of valuable experiments, by lifting the curtain, and inserting various articles of food, and witnessing the process of digestion.

Movement of the Stomach. — The presence of food in the stomach

causes its muscular coat to contract and throw it about from side to side, mixing it thoroughly with the gastric juice, and reducing it to a pulpy mass, called *chyme*. This, as fast as it is properly prepared, passes through the pylorus into the upper bowel, or *duodenum*, called also the *second stomach*.

Chyme. — A certain witty professor of anatomy and physiology, is in the habit of asking his class if they ever saw any chyme; and when they answer no, as they often do, he calls their attention to what they occasionally see in the morning, upon the sidewalks, where drunken men have held themselves up by lamp-posts, and left the contents of their stomachs.

The pylorus, or opening into the bowel, has a very singular and wise instinct, which is worthy of remark. When a piece of food, which has not been digested, attempts to pass into the bowel, the moment it touches the inner surface of this orifice, it is instantly thrown back by an energetic contraction; though a portion of well-prepared chyme touching the same opening immediately after, is allowed to pass on unchallenged.

Chyle. — The chyme, when it reaches the duodenum, seems to cause the liver to secrete bile, and the pancreas to produce the pancreatic juice. These two fluids are conveyed into the upper portion of the second stomach, and are there mixed with the chyme, and cause it to separate into a delicate, white fluid, called *chyle*, and a residuum, which, being worthless, is pushed onward, and thrown out of the body.

Bile in the Stomach. — Most persons suppose that bile is generally found in the stomach; but this is a mistake. It is thrown up by vomiting, because in that act, the action both of the first and the second stomach is *reversed*, and the bile is forced up from the duodenum, — taking a direction the opposite of its usual course.

Destination of the Chyle. — The chyle being separated from the dregs, is pushed onward in its course by the worm-like motion of the intestine; and as it passes along, it is gradually sucked up by thousands of very small vessels, whose mouths open upon the inner surface of the bowel. These little vessels are called *lacteals*, from the Latin word *lac*, which means milk, because they drink this white, milky fluid. Figure 61 shows a section of the small bowel, turned inside out, and covered with the villi, or root-like filaments, closely set upon its surface, for absorbing the chyle, and at the bottom of which, the lacteals take their rise.

Fig. 61.

In these lacteals, and in the mesenteric glands, the chyle is gradu-

ally changed, so as to approach nearer and nearer to the nature of the blood; but precisely what the change is, or how it is effected, is not known. Several men have published their theories upon these points, and the writer has opinions upon them; but it is not worth while to trouble the reader with them. It is sufficient to say that the fluid is carried by the lacteals to the thoracic duct, through which it is conveyed into a large vein at the lower part of the neck, where it is poured into the blood, and becomes, after going through the lungs and experiencing another and a vital change, the material out of which our bodies are daily and hourly new-created.

Fig. 62.

Figure 62 gives a general idea of the stomach, bowels, etc.: 9, being the stomach; 10, 10, the liver; 1, the gall bladder; 2, the duct which conveys the bile to 4, which is the duodenum; 3, is the pancreas; 5, the œsophagus; A, the duodenum; B, the bowels; C, the junction of the small intestines with the colon; D, the appendix vermiformis; E, the cœcum; F, the ascending colon; G, the transverse colon; H, the descending colon; I, the sigmoid flexure; J, the rectum.

Nature and Destination of Food.

The food which man requires for his support and development is of two kinds, the inorganic, and the organic. The first of these embraces certain mineral substances, as common salt, sulphur, phosphorus, iron, and lime, either in combination or separate.

These are not generally reckoned as aliments, and yet no human being can live without them. In their absence, the body decays, disintegrates, and perishes. Common salt is composed of muriatic acid and soda. The first is an important ingredient in the gastric juice, and the latter promotes the secretion of bile. Sulphur is found in several of the tissues, particularly in the muscles. Phosphorus united to fatty matter, is highly honored in forming a portion of the brain and nerves, and is also combined with oxygen and lime to make the earthy or hard part of bones.

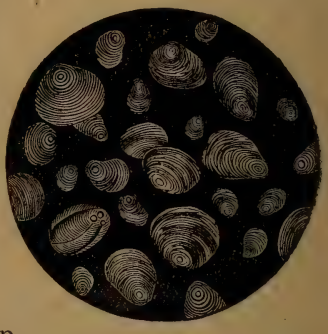
Found in Food. — These articles it is not necessary often to introduce into the system in a separate state. They are contained, in larger or smaller proportions, in most articles of food; and man always suffers, as all animals do, from their absence. Common salt is found

in the flesh of animals, in milk, and in eggs. It is not very abundant in plants; and we all know how eagerly domestic animals devour it when it is given to them, and how constantly wild cattle resort to the salt springs, which, in the great West, are called "buffalo licks." Lime exists in nearly all animal and vegetable substances. In wheat flour we get it in combination with phosphoric acid, that is, as phosphate of lime. Lime exists, too, in the state of carbonate and sulphate, in all hard water. Iron is found in the yolk of eggs, in milk, in animal flesh, in potatoes, pears, cabbages, mustard, and other articles. Sulphur we get in flesh, eggs, and milk; and, as sulphate of lime, in spring and river water. Phosphorus is derived from eggs and milk; and flesh, bread, fruits, and husks of grain, commonly called bran, contain even a larger proportion than we need in our diet.

Organic Food.— The organic elements of man's food, which in bulk embrace almost the whole of it, remain to be considered. In the animal economy they serve two great purposes. A part of the articles which compose them are blood-formers, out of which all the tissues are made,— the other part produce fat, which serves to warm the body by being burned with oxygen. These articles are derived partly from the vegetable and partly from the animal kingdom.

Divided into Four Groups.— For convenience, these articles may be divided into four groups. For the first, sugar stands as a type. We therefore call it the *saccharine* group. It embraces starch, gum, and the fibre of wood. These articles may all be converted into sugar by a simple chemical process. Figure 63 gives a microscopic view of the granules of starch.

FIG. 63.



The *second group* we call the *oleaginous*. It is composed of oily substances, from whatever source derived, whether the animal or the vegetable world.

The *third group* is the *albuminous*. A good type of it is the white of egg.

The *fourth* is the *gelatinous*, or *jelly* group.

First and Second Groups, Supporters of Respiration.— The articles composing the first and second groups are analogous in composition, all containing *oxygen*, *hydrogen*, and *carbon*. They are what Liebig calls supporters of respiration; the meaning of which is, in more comprehensible terms, that they are *supporters of combustion*. They are the *fuel which warms us*. They keep the fires going, from which arises all the heat we have in our bodies. But they are destitute of nitrogen, and, on this account, they are not blood-formers, and cannot be worked into flesh. Hence, man cannot live on them.

The food articles embraced in the third and fourth groups, also contain oxygen, hydrogen, and carbon; and to these they add *nitrogen*. This fourth component part, which forms only a small portion of them, gives them, for some reason never explained, the peculiar

quality of producing blood and flesh. They are the raw materials, out of which our bodies are reconstructed from day to day.

Feed a man ever so largely upon sugar, starch, gum, and oils, and he will starve as certainly as if he were allowed nothing but water.

Names of Two Great Divisions of Food. — The possession or non-possession of nitrogen, then, is what distinguishes from each other the two great classes of food-articles. Those which contain nitrogen have been called *nitrogenized*, and those which are destitute of it, *non-nitrogenized* compounds. As nitrogen is often called *azote*, the former class are more frequently named *azotized;* the latter, *non-azotized.*

Let the reader now fix it in his mind that the azotized articles of food produce blood and flesh; the non-azotized, heat; and he will have the key to understand much of what is to be said, and likewise to unlock many of the mysteries of diet.

Nutrition Table. — Taking human milk as the standard, and expressing the amount of nitrogen it contains by 100, the following table shows the relative amount of nitrogen in the principal flesh-producing articles of food, and consequently their power of forming the tissues:

VEGETABLE.

Rice,	81	Potatoes,	84
Rye,	106	Turnips,	106
Corn,	125	Carrots,	150
Barley,	125	Peas,	239
Oats,	138	Beans,	320
Wheat,	144		

ANIMAL.

Human Milk,	100	White of Egg,	845
Cows' Milk,	237	Herring,	910
Oyster,	305	Haddock,	816
Yolk of Eggs,	305	Pigeon,	756
Cheese,	331–447	Lamb,	833
Eel,	428	Mutton,	852
Pork-Ham,	807	Veal,	911
Salmon,	610	Beef,	942

Other Standards of Value. — We must not infer that those articles which have most nitrogen are necessarily best adapted for human diet because they are the most effective blood-producers. In deciding the value of an article for food, other things are to be looked at beside its nutritive qualities. Those which are poor in nitrogen, are rich in carbon and hydrogen, and are well fitted to serve the double purpose of nourishing and warming the body at the same time. The fitness of an article for diet, depends very much upon the ease or difficulty with which it is digested and assimilated. If an article, having a great deal of nitrogen, and being very nutritive, is with great difficulty reduced in the stomach by the digestive process, it

may be much less desirable for food than one which is digested and assimilated easily, but is much poorer in nutritive qualities.

Heat-generating Food Articles. — The reader has before him the principal blood and tissue-forming food articles. Those which we reckon as fuel, or heat-generators, are chiefly oils, sugar, starch, farina, sago, arrow-root, tapioca, gums, etc. These are less essential than the others; for the blood-forming articles have within them the elements, out of which fat is formed in the process of assimilation; for many of them contain starch; and this, in the human organism, is changed into fat. The amount of starch in some of these articles is as follows:

Wheat flour, good quality,	100,	contains	65 to 66	parts in	100	*pure starch.*	
Wheat,	108	"	53 " 56	"	"	"	
Barley meal,	119	"	64 " 65	"	"	"	
Barley,	130	"	37 " 37	"	"	"	
Rye,	111	"	44 " 47	"	"	"	
Buckwheat,	108	"	43 " 44	"	"	"	
Indian Corn,	138	"	65 " 66	"	"	"	
Rice,	171	"	85 " 86	"	"	"	
Peas,	69	"	38 " 39	"	"	"	
White Beans,	59	"	37 " 38	"	"	"	

In the Nutritive Food Articles, there is a fixed relation existing between the elements of the tissue-formers and the heat-producers, which they contain. Out of a few of them Baron Liebig has constructed the following table:

For every ten parts of blood and tissue-formers there are, —

In Wheat flour,	10	-	46	In Barley,	10	-	57
In Rye meal,	10	-	57	In Rice,	10	-	123
In Oatmeal,	10	-	50	In White potatoes,	10	-	86
In Buckwheat,	10	-	130	In Blue potatoes,	10	-	130

Diet a Complex Subject. — From the facts and tables now presented, it appears that the question of diet is one of complexity; and that the determination of its several points, require that a number of things should be taken into the account. First, in deciding the usefulness of any article, we may inquire respecting

Its Digestibility. — If an article be not digestible, it is of little consequence how much or how little albumen, starch, or nitrogen it may contain. The first and most important inquiry respecting it is, is it *digestible?* If not, it is to be rejected; for, whatever other qualities it may have, it can only injure the stomach, and embarrass the whole system.

The following table will be useful to the reader, though I do not set it down as reliable in all cases. There is often a great difference in the ease with which different stomachs will digest the same food. Many stomachs are afflicted with what is called an idiosyncrasy, — a habit, peculiar to itself, of rejecting, or refusing to digest, some one, or more, articles which are acceptable to all other stomachs. This

table shows the length of time required for digesting the several articles in the stomach of St. Martin, as shown by the experiments of Dr. Beaumont:

Articles.	Preparations.	Time.	Articles.	Preparations.	Time.
		h. m.			h. m.
Rice	Boiled	1 —	Pork, recently salted	Raw	3 —
Pig's feet, soused	Boiled	1 —	Soup, chicken	Boiled	3 —
Tripe, soused	Boiled	1 —	Oysters, fresh	Roasted	3 15
Trout, salmon, fresh	Boiled	1 30	Pork, recently salted	Broiled	3 15
" " "	Fried	1 30	Pork steak	Broiled	3 15
Apples, sweet, mellow	Raw	1 30	Corn bread	Baked	3 15
Venison, steak	Broiled	1 35	Mutton, fresh	Roasted	3 15
Sago	Boiled	1 45	Carrot, orange	Boiled	3 15
Apples, sour, mellow	Raw	2 —	Sausage, fresh	Broiled	3 20
Cabbage, with vinegar	Raw	2 —	Beef, fresh, lean, dry	Roasted	3 30
Codfish, cured, dry	Boiled	2 —	Bread wheat, fresh	Baked	3 30
Eggs, fresh	Raw	2 —	Butter	Melted	3 30
Liver, beef's fresh	Broiled	2 —	Cheese, old, strong	Raw	3 30
Milk	Boiled	2 —	Eggs, fresh	Hard boiled	3 30
Tapioca	Boiled	2 —	" "	Fried	3 30
Milk	Raw	2 15	Flounder, fresh	Fried	3 30
Turkey, wild	Roasted	2 18	Oysters, fresh	Stewed	3 30
" "	Boiled	2 25	Potatoes, Irish	Boiled	3 30
" domesticated	Roasted	2 30	Soup, mutton	Boiled	3 30
Potatoes, Irish	Baked	2 30	" oyster	Boiled	3 30
Parsnips	Boiled	2 30	Turnip, flat	Boiled	3 30
Pig, sucking	Roasted	2 30	Beets	Boiled	3 45
Meat hashed with vegetables	Warmed	2 30	Corn, green, and beans	Boiled	3 45
			Beef, fresh, lean	Fried	4 —
Lamb, fresh	Broiled	2 30	Fowls, domestic	Boiled	4 —
Goose	Roasted	2 30	" "	Roasted	4 —
Cake, sponge	Baked	2 30	Veal, fresh	Broiled	4 —
Cabbage-head	Raw	2 30	Soup, beef, vegetables, and bread	Boiled	4 —
Beans, pod	Boiled	2 30			
Custard	Baked	2 45	Salmon, salted	Boiled	4 —
Chicken, full-grown	Fricasseed	2 45	Heart, animal	Fried	4 —
Apples, sour, hard	Raw	2 50	Beef, old, hard, salted	Boiled	4 15
Oysters, fresh	Raw	2 55	Pork, recently salted	Fried	4 15
Bass, striped, fresh	Broiled	3 —	Cabbage, with vinegar	Boiled	4 30
Beef, fresh, lean, rare	Roasted	3 —	Ducks, wild	Roasted	4 30
" steak	Broiled	3 —	Pork, recently salted	Boiled	4 30
Corn cake	Baked	3 —	Suet, mutton	Boiled	4 30
Dumpling, apple	Boiled	3 —	Veal, fresh	Fried	4 30
Eggs, fresh	Boiled soft	3 —	Pork, fat and lean	Roasted	5 15
Mutton, fresh	Broiled	3 —	Suet, beef, fresh	Boiled	5 30
" "	Boiled	3 —	Tendon	Boiled	5 30

This table may be considered as giving a general idea of the relative digestibility of the food-articles contained in it. If not found exactly right in each individual case, it can be rectified by experience. The experience of no other individual's stomach will ever be found precisely like that of St. Martin's, — though in its general features, it may be sufficiently similar to make his valuable. The general principles of conduct may be learned from the experience of others. The particular application must come from our own experience and reason.

Digestibility Influenced by Amount. — The rapidity with which any

article is digested will vary with the amount taken. A larger quantity than is called for by the wants of the system, will be digested more slowly than the proper amount; while, on the other hand, an insufficient supply begets an inability to reduce in the stomach even the small quantity taken. We may err in taking too little food as well as in taking too much; though the former error is much less likely to occur than the latter.

Choosing Food in Ill Health. — But in deciding the *kind* and *amount* of food, we must be guided not only by its digestibility, but by the state of the health.

If we find the stomach apparently in good working condition, capable of dissolving properly whatever is submitted to its action, and yet we are for some cause losing flesh and strength, we should resort not only to the most nutritious of the albuminous group of the azotized articles, but likewise to the oleaginous group of the non-azotized. We want a great amount of nutriment, and we need oils to make fat. This is the kind of food generally wanted in constitutional consumption.

In fevers, but little food can be disposed of at best; and that little must be chosen with reference to its mildness and its unstimulating qualities. Generally the farinaceous or starchy articles are most suitable, because they have no stimulating and irritating qualities, and especially because they furnish fuel to be burned with oxygen, and thus take the place of the animal tissues, which are being rapidly consumed with this devouring element. In fever, oxygen is literally burning up the body. In this state of the system, this element acquires, by some means, a singular affinity for the tissues; and, uniting with them rapidly, forms a true combustion. The physician who throws to this devouring agent some of the mild, non-azotized articles which offer it stronger affinities than it finds in the tissues, is as wise as he who tosses his dog to a hungry lion to avoid being devoured himself.

Exercise to be Considered. — In deciding the diet, the amount of exercise is not less important to be considered than the health. The farmer, who works in the open air, and uses his muscles a great deal, wants considerably more nutritive, as well as more combustive, food than one who leads a sedentary life. Of course there is a great deal more waste of the tissues, and he requires more of the flesh-forming articles; and as he breathes deeper, and takes in more oxygen, he needs more of the supporters of respiration, — the sugars, oils, and starchy aliments.

Beans. — By turning to the table which shows the amount of nitrogen in the different food-articles, the reader will see that *beans* are rich in this element. They are, therefore, excellent food for working men, who are obliged to make great use of their muscles. Our fathers, who broke and subdued the rocky soil of New England, showed wisdom even in their instincts in taking so large a portion of their aliment from the bean, — especially as they *oiled* it with the fat

of pork. But for the hard-working *student*, who daily makes heavy drafts upon his brain and nervous system, beans and peas are an improper diet. They contain no *phosphorus*, in the shape of phosphate of lime; and no brain can work hard without a due supply of phosphorus, which forms a part of its substance.

Unbolted Wheat Flour. — For the man who uses his brain a great deal, there is no other *one* article of food equal to bread made from unbolted wheat flour. Fine wheat flour is little better for him than beans, because the miller has robbed it of much of the phosphorus, which is found chiefly in the hull or bran.

I mention only two or three articles of food as specimens. By looking over the tables furnished, and reasoning upon the whole in the way I have done upon these few, the reader can give every article something like its proper value in most circumstances.

Climate. — If health and exercise should influence us in choosing the kind and the amount of food, *climate* must do so quite as much.

In the frigid climate of high latitudes, it is necessary that a great deal of heat be produced in the body, in order to avoid perishing with cold. There is no mystery now, as there once was, about the production of this heat. It comes from the burning of carbon and other substances in the body, where they unite with oxygen, and make just as real a fire as that which warms our houses. Oils, sugar, starch, gums, etc., are largely composed of carbon, and readily unite with oxygen in the body. This is the reason why they are reckoned as *fuel*, and are called *supporters of combustion*. And *for this reason*, they require to be largely consumed in very cold climates. The instincts of men seem to lead to the same conclusion, for the dwellers in all high latitudes, consume great quantities of oils and fats. The amount of train oil, tallow, the fat of seals and other animals, devoured by the Laplanders, Kamtschatkians, and other northern people, is truly wonderful.

In hot countries, the fundamental rule for preserving the health, is to keep the body cool. Without observing this rule, the strongest will often fall victims to the climate in low latitudes. But to keep cool, of course all the heat-producing articles of food should be avoided. Particularly all alcoholic drinks, which are powerful supporters of combustion, should be rejected. Rice, and the various fruits form the most suitable articles of diet.

The great sacrifice of life which we have witnessed the last few years among the emigrants to California, has been the result chiefly of using ardent spirits and heat-producing food while crossing the Isthmus, which, to a northern constitution, is much like a vast oven, heated to a temperature suitable for baking bread. There are few persons, with tolerable health and strength, but would safely endure the ordeal of the Isthmian passage, if they would live light for a few days before starting; and during the passage, take only an abstemious vegetable and fruit diet.

Bayard Taylor's Opinion. — The distinguished traveller, Bayard Taylor, reports that while spending a few days in a heated part of

Africa, he lived, as the inhabitants did, pretty much entirely upon the flesh of well-fatted sheep; and that he enjoyed, meantime, excellent health and strength. From this he concludes that animal food is as suitable in hot climates as in cold.

It is a pity a man of such excellent parts as Mr. Taylor, should allow himself to rear so tall a structure upon so narrow a foundation. That he could live on flesh in so hot a region, and not be made sick, only proves that he has a fine constitution, and that his health is not easily disturbed; and when he attempts from his limited experience of a few days, to reason against the established facts of science, and against the well-attested laws of life, he does it evidently without reflecting that he is in a field of thought which he has never had occasion to cultivate.

The great Jewish Lawgiver doubtless had a reason for prohibiting pork to the Jews. Whatever that reason was, the prohibition had a wise bearing upon the health of the people. Palestine has a hot climate, in which pork-fat is an improper diet.

More Fat in Winter. — It follows from what has been said, that a more fatty as well as stimulating diet is needed in winter than in summer. But the change should be made gradually. When cold weather approaches, the food should become more nutritious and warming by little and little. The exercise should likewise be increased.

Even the lower animals act upon this plan. In the fall, squirrels eat nuts, which are full of oil, and grow fat upon them.

The instincts of men move in the same direction. It is in the fall that the hog, the ox, and the poultry are killed; and in the winter that they are largely feasted upon and enjoyed. Upon such food, combined with various sorts of starch, man fattens; and a good supply of fat, deposited in the cells, is equal, in keeping out cold, to a layer of cotton batting, — to say nothing of the fire kept up within the body by the burning of such fuel. As hot weather comes on, we gradually lay aside these fattening articles (or ought to), and return to the watery vegetables and fruits, such as squash, string beans, strawberries, currants, etc.

Few of us, I apprehend, would suffer from heat in summer, if we could persuade ourselves to abandon stimulating and fire-producing food, and confine ourselves pretty much to a cooling and succulent diet. Diarrhœas in summer are not induced by eating wholesome vegetables, but by combining them with large quantities of animal food.

The State of the Mind. — This should by no means be overlooked in choosing the kind and the amount of food. If we have lost friends, or heard desponding news, or experienced calamities of any kind, we must during the first hours of the shock, or even during the first days, if the affliction be heavy, partake very sparingly of food. The stomach is in no condition to receive it. The brain lies prostrate under the stroke, and the stomach, in sympathy with it, asks for a day of sorrow and fasting. Disturb it not.

Heat-producing Food Incompatible with Excitement. — It is folly to take heat-producing aliment when laboring for days under high excitements. During political campaigns, when the blood of politicians is at the boiling point, the diet should be unstimulating, — containing very little animal flesh, and not much combustive food. Many a man has died of apoplexy, or of heart disease, by putting on the steam when his blood was up. Whenever we have a day of uncommon excitement to pass through, we should always begin and end it with an unusual degree of abstinence as to the amount of food taken, and with special care that the articles be of the lightest kind.

Anger Demands Abstinence. — Anger is a passion which especially unfits the stomach for doing much work. If it occur often, or be protracted, but little food should be taken. Those who indulge it, have a double cause for abstinence. Both their folly and their stomachs call for a fast.

Food Adapted to Different Periods of Life. — Food must vary in different periods of life. The infant needs a fattening diet; and this has been supplied in the milk of the mother, which contains more *butter* (the fattening portion) than the milk of any other animal. But as the infant has much less exercise than the young of animals, its flesh is not wasted, and it does not require so much *azotized* food, that is, the reader will remember, food with *nitrogen in it.* Accordingly, it will be seen by looking at the table on page 67, that human milk has much less of this element than that of the cow. As the child grows up, and begins to take active exercise, indoors and out, it wants more solid food, and teeth make their appearance to masticate or chew it.

In Youth and Manhood, the great amount of exercise usually taken, calls for larger supplies of azotized aliment, — beef, mutton, pork, fowl, fish, wheat flour, corn-meal, rye-meal, potatoes, turnips, peas, beans, etc. This is the working part of life, when the tissues are rapidly wasted by action, and the *flesh-forming aliments* are wanted to keep them good.

In Old Age, the exercise is diminished, the blood circulates more slowly, and the body grows cold. Now is the time to resort to *non-azotized* food, — oils, fats, the various kinds of starch, sugar, and the like. These will furnish fuel to warm the sluggish blood, and will invest the body with fat, which will serve the purpose both of a cushion and a garment. Wine, beer, porter, and distilled spirits are never needed by young persons in health; but the aged are frequently benefited by them, if taken in small quantities. They are chiefly composed of oxygen, hydrogen and carbon, and are properly ranked with the supporters of combustion. They are likewise stimulant, and add to the comfort of the old by quickening their circulation. Like tea and coffee, they diminish the waste of the body, and thereby lessen the demand for food.

The smallest amount of aliment upon which a healthy adult person ever lived for any length of time, was twelve ounces a day. Upon

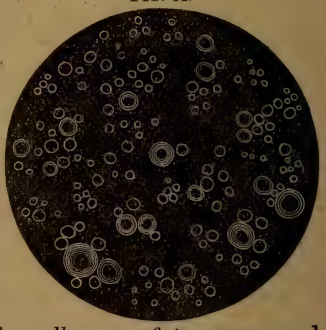
this small daily allowance, Lewis Cornaro, a noble Venetian, subsisted in perfect health, during the protracted period of fifty-eight years. This he was able to do only by adding daily to his food about twelve ounces of light wines. I shall have occasion to refer to this case again.

Cost of Food.

One other consideration must ever influence the great majority of men in selecting their food. I mean its cost. It is a matter of great importance to the poor, to know what kinds of food they can subsist upon with least expense. For the last few years provisions have been so high, that persons in poor circumstances greatly need advice in this matter. Let me endeavor to furnish some information which shall be of service to the reader.

Milk is supplied by nature to be our first food, and is a good type of all alimentary substances. It contains *curd*, which has nitrogen, and is equivalent to albumen and fibrine, and represents the *blood-formers*. It has butter and sugar. These represent the *heat-formers*. It has salts, which contain potash, soda, phosphorus, etc. Figure 64 is a microscopic view of good milk; Figure 65, of poor milk; and Figure 66, of milk adulterated with calf's brains.

Fig. 64.



Food will be valuable in proportion as it combines, in due proportion, the articles contained in the four groups, represented by *albumen*, *fat*, *sugar*, and *salts*.

Fig. 65.

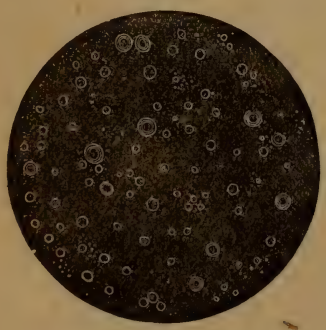
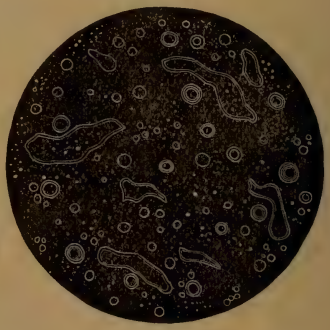


Fig. 66.



Albuminous Group. — Albumen, fibrine, casein, gluten, and legumin, all enter into the substance of animal and vegetable bodies, and are all composed of the same elements, namely, 48 parts carbon; 36 of hydrogen; 14 of oxygen; and 6 of nitrogen. In containing nitrogen they all differ from the other three groups. Albumen being a good type of them, they are called albuminous compounds. Albu-

men forms a large portion of the serum, or colorless part of the blood. It is the leading principle in alimentation. It is worked up into the tissues of our bodies. It forms our muscles, our membranes, a portion of our nerves, etc. It is the bricks of which the house we live in is made. All the articles, therefore, which are chemically constituted like it, may well be termed albuminous.

These bodies, consisting of the four organic elements named above, have been called *quaternary compounds.* Beside these elements, they have a minute portion of sulphur and phosphorus. It has been assumed that these compounds contain a common principle called *proteine;* and hence they have been called *proteinaceous compounds.* It is doubtful whether such a principle can be obtained.

Albumen is a very unstable compound, — tending strongly to decomposition. This is owing to the complexity of its composition, and to its union with the fickle element, nitrogen, which forms chemical compacts reluctantly, and breaks them without remorse. Substances which coagulate or fix albumen in an insoluble compound, or preserve the tissues of the body, which are made from it, from decomposition or putrefaction, are called *antiseptics.*

Fatty Group. — The next group, represented by fat, performs very important offices in the system, — the most important of which, is a union with albumen in the formation of cells. All animal and vegetable life begins with the cell, — the tiny cup, with which nature dips all the streams of life out of the great fountain of inorganic matter. No cell is formed without a minute particle of oil. The portion not used in forming cells, is either burned as fuel, to keep us warm, by uniting with oxygen, or it is stored away in the cellular tissues, adding to the bulk of the person. If, then, the very beginnings of life are dependent upon fat, it is of great importance as an article of diet. So necessary is it in the economy of life, that when not taken in the food, it is formed out of albumen in the processes of assimilation.

The Starch and Sugar Group, composed of several kinds of sugar, gum, etc., is never used in forming the tissues, but they perform important offices in the changes going on within the human organism. Thus, sugar of milk is decomposed, and forms lactic acid, so called from being found in sour milk. This acid plays a very important part in the process of nutrition.

Pure starch is a snow-white powder, having a glistening aspect. It is composed of grains from $\frac{1}{300}$ to $\frac{1}{3000}$ of an inch in diameter in the different grains; being largest in the potato, and smallest in wheat. When examined with the microscope, they appear as in Figure 63.

The Salts Group are sufficiently spoken of in another place.

A wise philosopher in ancient time said, "I do not live to eat and drink; I eat and drink to live." If we intend to eat to live, we must combine, in our food, the four groups above explained; and if we would live at as small expense as possible, we must take those articles which are low in price, and rich in nutritive matter. The following table will help the reader make his selections:

Table of the relative value of articles of food arranged according to their proportions of nutrient matter in each of the four groups of elements concerned in vital changes.

In 100 pounds of	Standard water.	Husk or woody fibre.	1st Group. Albuminous substances.	2d Group. Fats.	3d Group. Starch and Sugar.	4th Group. Salts.
GRAINS.						
Wheat	15	15	10 to 19	2 to 4	55	2
Barley	15	15	12 to 15	2 to 3	60	3
Oats	16	20	14 to 19	5 to 7	60	4
Rye	12	10 to 20	10 to 15	3 to 4	60	2
Indian Corn	14	6	12	5 to 9	70	1½
Buckwheat	15	25	8	0.4	50	4
Rice	13	3	7	0.7	75	0½
POD PLANTS.						
Beans	14	8 to 11	24 to 28	2 to 3	40	3
Peas	14	9	24	2.1	50	3
ROOTS.						
Potato	75	4	2.0	0.3	18	¾ to 1½
Turnip	88	2	1.5	0.3	9	½ to 4-5
Carrot	85	3	1.5	0.4	10	1½ to 2
Beet (mangold wurtzel)	85	2	2		11	¾ to 1
Long red	85	3.03	0.48		10.36	1¼
Short red	85	3.31	0.26		12.46	.75
Sugar beet	85	2		0.35	13	
Parsnip	80	1½	2.5		16	½
LEAF.						
Cabbage			30 to 35			
MEAL.						
Wheat flour	10.33		9.70	2	68 Starch 5.85 Sugar 4.12 Gum	
Rye meal	14.50	4.63	8.97	3	66.54 Stch 2.56 Sugar 9.40 Gum	2
Barley meal	14		14	2	68	2
Oat meal	14		18	6	62	
Wheat bran	13.1	55	19.3	4.7	.6	7.3

The following tables have an admirably practical bearing upon economy in food:

100 lbs.	Muscle-forming Elements, in lbs.	Fat-forming Elements, in lbs.	Relative Proportion of each, in lbs.	Husky, or Woody fibre, in lbs.
Barley,	14	64	1 to 4½	15
Beans,	26	42	1 to 1¾	10
Beets,	2	12	1 to 6	(?)
Buckwheat,	8	54	1 to 6¾	25
Carrots,	1½	10	1 to 6⅔	3
Corn,	12	77	1 to 6½	6
Oats,	17	66	1 to 4	20
Peas,	24	52	1 to 2¼	8
Potatoes,	2	19	1 to 9½	4
Turnips (field),	1½	9	1 to 6	2
Do. (Swedish),	2½	12	1 to 5½	2
Wheat Flour,	11	79	1 to 7	
Wheat Bran,	18	6	1 to ⅓	55
Cheese,*	28	27	1 to 1	
Cheese,†	45	6	1 to ⅛	

* Whole milk. † Skim-milk.

Articles.	Cost.	Muscle-producing Elements.	Cost of Muscle-producing Elements.
Barley,	$1 50 per bu.	8.4 lbs.	18c. per lb.
Beans,	2 50 "	16.6 "	15c. "
Corn,	1 10 "	6.7 "	16⅔c. "
Oats,	68 "	5.2 "	13c. "
Peas,	2 00 "	14.3 "	14c. "
Potatoes,	1 50 "	1.6 "	94c. "
Turnips,	50 "	1.2 "	41c. "
Flour (fine),	12 00 per bbl.	22.0 "	54c. "
Flour (unbolted),	11 00 "	24.8 "	44c. "

These tables will well repay study, for their practical use will save many dollars to the poor. Let it be remembered that producing muscle is the same thing as producing strength, or *labor power*. Bearing this in mind, the following table will be very interesting:

One pound of labor-power from					Potatoes	costs	94c. per lb.
"	"	"	"	"	Fine Flour,	54c.	"
"	"	"	"	"	Unbolted do.	44c.	"
"	"	"	"	"	Turnips,	41c.	"
"	"	"	"	"	Barley,	18c.	"
"	"	"	"	"	Corn,	17c.	"
"	"	"	"	"	Beans,	15c.	"
"	"	"	"	"	Peas,	14c.	"
"	"	"	"	"	Oats,	13c.	"

Meats are omitted in the table. So far as their nutritive qualities are concerned, it is of little consequence which are taken. Some are more digestible than others, and this consideration should influence those with weak stomachs in selecting. Every person, of course, knows their relative cheapness.

Among the vegetables given in the table, there is a wider range for choice. Let us consider them in course.

Wheat. — In this, the four groups are represented in excellent proportion. When not deprived of the bran, it is perhaps the very best supporter of animal life. So high have been the regards of men for it, and so generously have they awarded to it their acknowledgments, that its product, bread, has been everywhere called "the staff of life." It is unfortunately held at a high price. My hope is that the immense prairies at the West, adapted to its culture, will yet furnish it in such profusion as to bring it within the means of all.

Barley. — This has the four groups represented in nearly the same proportions as wheat. It is, therefore, nearly as valuable an alimentary grain. Unfortunately it is not so toothsome as wheat, and can never be so popular an article of diet. The Scotch, however, feed upon it with apparent relish, and doubtless think it strange that foreign palates are not better pleased with it.

Oats. — This grain, strange to say, has more albuminous, or nutritive matter, more fat, more starch, and more salts than wheat. In uniting a large quantity of the four alimentary groups, it surpasses every other vegetable substance. In albumen, it is not quite as rich

as peas and beans, and in starch it falls a trifle below fine wheat flour; but in fat it is exceeded only by Indian corn. This grain is likewise consumed largely by the Scotch, — a people whose claims to shrewd common sense are well supported by, as their hardy constitutions vindicate, the choice. This grain might well be permitted to take the place of rice. It affords several times as much nutriment, while it costs only about one-fifth as much. There is good reason why the horse should thrive upon oats. Most stable-keepers think their horses will do more work upon corn-meal, but this must be a mistake. In using oats for horse-feeding, a large portion of the nutriment is lost by not *grinding* them.

Rye. — This is also a grain of considerable nutritive value. It is much cheaper than wheat; and rye meal has long been a standard article of diet in New England, — particularly in connection with Indian meal, as "brown bread." It is useful for relieving costiveness, in the form of "hasty-pudding," with molasses.

Indian Corn. — This staple article of American produce needs no praise from me. It is comparatively cheap, nutritive, and wholesome. It abounds in fat and starch, and has a fair amount of albumen, though not as much as the oat, the barley, or the wheat. In salts, it is rather deficient. Indian corn is strictly an American plant, and is perhaps the most popular grain in the country. It has emphatically a national reputation, and is perhaps worked up into more savory dishes than any other. At the South it is an institution. It is there made into hoe cake, corn cake, batter cakes, batter bread, muffins, corn pone, etc. At the North, we have jonny cake, Indian and pumpkin cake, baked Indian pudding, boiled Indian pudding, beside the well-known rye and Indian bread, and other preparations. Give an ingenious Southern or Northern housewife a few simple adjuncts, such as lard, milk, sugar, eggs, cream of tartar, and soda, and she will make a pretty respectable larder from this single grain. If molasses be substituted for sugar, and a little stewed pumpkin be thrown in by way of garniture, we may have several preparations which are very nourishing as well as cheap.

Buckwheat. — Poor in nutritive matter, fat, starch, and sugar, but tolerably well supplied with salts. It will do very well for batter cakes in winter. When brought smoking upon the table, and served with sugar or molasses and butter, these cakes are a luxury, in which the rich may indulge if they choose; but for the poor, the amount of nourishment they afford is too small for their cost.

Rice. — Much like buckwheat, except that it has more fat, sugar, and starch, and less salts. As an article of diet, it has had too high a reputation. Those who would live on small means cannot afford it. Boiled in plain water, it is excellent for a relaxed state of the bowels; and this is about all the commendation to which it is entitled.

Beans. — The richest in nutritive matter of all vegetable substances, except cabbage and oats. They have more albumen than wheat,

or corn, or barley, or oats; but in fat and starch, they are lower in the scale. Add to them salt pork, and the highest of all nutrient compounds is obtained. During not less than four generations, pork and beans, as the principal diet, nourished an iron-sided race of men in New England. Bean-porridge was like honey upon the tongue of the founders of New England institutions. They ate it morning, noon, and night; and thanked God for it every time. And well they might thank Him; for, with Indian corn, it furnished them with a diet better adapted to their condition than any other.

Peas. — Not quite as rich as beans in albumen, but more rich in starch; of about the same value on the whole. The Canadian French in Lower Canada, feed on peas to about the same extent that the New Englanders did on beans. Pea-soup, as prepared by the best cooks among them, is a dish of great nutritive excellence; and, in my judgment, more palatable than bean-soup.

The Potato. — Three-quarters of this root is water, and it is poor in all the elements of nutrition. It is a palatable article, and most persons are much attached to it. As *bulk* is of some consequence in food, the potato is not without value; but should the disease with which it has been tormented for several years, finally exterminate it, the loss to the world would not be so great as many suppose. Men do not often live entirely upon potatoes, — not even in Ireland. Milk, butter-milk, and especially cabbage, are united with them.

Turnips, Carrots, Beets, Parsnips. — These are much alike, — being all poor in nutritive qualities. They serve to please the palate by furnishing a variety; but in our city markets, they are expensive, and do not furnish an economical diet.

Cabbage. — It is interesting to observe how the instincts of men have in all ages led them to select those articles of diet which their circumstances have demanded. The poverty of the Irish has led them to subsist largely upon the potato, — a root which the soil of their country yields profusely. But as this root has but little nutritive matter, necessity required that it should be united with some other vegetable. The natural instinct selected the cabbage; and when chemical science came, at length, to pass judgment upon the correctness of this instinct, it turns out that the cabbage is the richest in albumen of any known vegetable. The cabbage, then, is the natural complement of the potato; and the Irish had the sagacity, without science, to bring the two together. It is said the Irish have a dish named "kohl-cannon," consisting of boiled and mashed potatoes and cabbage, seasoned with pork fat, pepper, and salt, and that it is a truly savory dish. It certainly is a nourishing, and a cheap one. The ambassador who was sent to tamper with the patriotism of a Roman who had dined on beans, was asked if he was silly enough to think gold and silver could bribe a man, who was satisfied with so plain a fare, and desired no other. We come to the conclusion, then, that bean porridge, pea soup, suet pudding, sweetened with molasses, oat meal, and barley bread, with "kohl-cannon" for those who can digest

it, will furnish, for hard-working men, the most substantial diet, at the smallest possible expense. To render these dishes savory, and to make the table on which they are spread an inviting board, the deft housewife must employ her best skill in serving them. With the thousand "fixings," with which a New England matron knows how to garnish them (or would know how if they came within her culinary operations), they are well fitted to leave savory impressions upon tongues which would praise them to the end of life. I speak of these articles as furnishing a cheap diet for working men. The indolent, the sedentary, and the effeminate from various causes, could not digest them.

The Amount of Food Taken.

We have already explained that this should be governed, in part, by the amount of exercise taken, by the condition of the health, by the state of the mind, by the climate, by the season, etc. It remains to add a few words, in a general way, respecting the absolute amount required by an adult man.

It is plain enough that most men eat too much. We come very near, in this country, being a nation of gormands. A principal reason of our over-eating is, that we eat so fast. When the food is well and slowly masticated and swallowed, the gastric juice has time to mix with it; and at the proper moment, the appetite ceases. But when our food is bolted rapidly, nature, finding her laws disregarded, and all her purposes frustrated, stands back, and lets us learn to stop, too late, alas! from a sense of fulness in a stretched and abused stomach.

It has already been stated, that Lewis Cornaro lived fifty-eight years, namely, from the age of forty-two to one hundred, on twelve ounces of solid food a day, with about the same amount of light wines. At the age of eighty-four, he wrote a book, in which he praises "divine temperance" in terms which are sometimes eloquent, and often enthusiastic. Indeed it is very rare that a man at that age retains such clearness of intellect, and especially such freshness of feeling as he evinces in his book. Probably but few could live on the amount of food which he found sufficient. Yet it is said the distinguished John Wesley lived on sixteen ounces a day, which, as he took no wine, and had to derive the combustive materials for warming the body from the food, was quite as scanty a fare as that of Cornaro. Considering that he led a most extraordinarily active life, both of body and mind, being half his waking hours in the saddle, and preaching almost daily, this is probably the most remarkable case of abstemiousness on record. Jonathan Edwards did not, I think, exceed the same amount of food, but he was not so active a man.

Putting aside such exceptional cases as these, we may say in round numbers, that a laboring man requires, to keep him in health, about two to two and a half pounds of solid food per day. For ministers, lawyers, doctors, authors, and merchants, one pound and a half is amply sufficient. The amount should be increased a little by a selection from some of the fuel-formers, if no fermented or alcoholic

drinks be taken, and slightly diminished if they are used. The reason is, that these drinks furnish fuel to be burned in breathing, which has to be drawn from the food, when they are not employed. This furnishes no motive for *using* ardent spirits; for there is fuel enough to be had in the oils, starches, and sugars.

Dyspeptics. — It is said that dyspeptics eat more than persons in health; and, in many cases, the remark may be true. The appetite of a person suffering from this disease is almost always morbid, and the information it gives respecting the real wants of the system, can seldom be trusted. If we allow a diseased stomach to dictate to us when, and what, and how much we shall eat and drink, our misery for life is a foregone question. A sick stomach is like a spoiled child, it cries for what it should not have. If the dyspeptic will live, and enjoy any amount of peace and comfort, he must follow this simple rule: *To eat no more than can be digested, even though the amount be only an ounce a day.*

Animal and Vegetable Food.

It has generally been supposed that it was intended man should subsist on a mixed diet, consisting of both animal and vegetable substances. Within the last twenty-five years, however, a school of physiologists have appeared in this country, who affirm that a vegetable diet is alone consistent with the laws of health. They declare that animal food is not adapted to man's organization, — that it unduly stimulates the blood, predisposes to fevers, consumptions, diarrhœas, choleras, apoplexy, and numerous other diseases, and of course shortens life. That such a school should have come into existence in this country, where animal food is more largely consumed than in any other part of the world, in proportion to the number of people, is not surprising. We do, undoubtedly, eat too much flesh. So enormous is the consumption, that notwithstanding the vast herds of cattle raised in all our agricultural states, the supply is not equal to the demand; and beef, for two years, has been selling in Boston market at twenty cents per pound, — at least twice its full value as a blood-former.

Facts show that man may live upon flesh alone, upon vegetables alone, or upon flesh and vegetables combined. Is it *best* he should subsist upon vegetables only, or upon a mixed diet? A mere affirmation upon these points is of little consequence. To cite facts avails nothing. Men have a way of making their own affirmations, and of looking at facts with eyes which sometimes see clearly enough on both sides of them, but totally ignore their existence.

Man's Structure Settles the Question. — To settle this matter, we must appeal to man's organization. His structure will tell us something we need not mistake. All the works of God show design. Everything he has made has a use, and is so contrived as to be adapted to that use. Lions, tigers, and other animals for example, which feed on flesh alone, have a *short* second stomach, — it being

only about three times the length of the animal's body. Animals which eat no flesh, have a long second stomach, — that of the sheep being from thirty to thirty-five times the length of its body. A very remarkable difference of anatomical structure!

This is the meaning of the difference: Vegetable food has a great deal of waste matter in it. Woody fibre makes quite an item in its composition. This waste portion must all be carefully separated from the nutritive part, and this must all be done in the second stomach. It takes time to do it. It must not be done in a hurry. The nutritive materials are destined to build a living structure, whose duration, like that of all other fabrics, will depend on the care with which the materials are selected and put together. The second stomach of the sheep is long, that there may be ample time for the mixed mass of chyme when it passes out of the first stomach, to be changed to chyle, and then to be carefully separated into the two parts, the useful and the useless. Animal food is in its composition just like our own flesh, — there is little waste matter, and not much time is required for its separation; hence, the second stomach of flesh-eating animals is short. Nearly the whole alimentary mass is quickly taken up by the lacteals, and there is no occasion for its travelling through a long second stomach.

Man's second stomach is in length midway between that of the flesh-eating and the vegetable-eating animals. If there be design in the works of the Creator, and if that design in the structure of the flesh and vegetable-consuming animals has now been correctly interpreted, it is plain that man is best nourished when he eats both kinds of food. The structure of his teeth, and the motions of his jaws (see p. 30), confirms the same conclusion.

Americans Eat too Much Meat. — Yet, as I have said, there is no doubt the Americans eat too much meat. Sedentary persons require but very little. Less is wanted in summer than in winter, — in warm climates than in cold. People of wealth, whose circumstances impose no bodily hardships, need less than the poor, who are much exposed, and work hard; whereas, they consume more. Those who do not labor with their hands, should never taste meat more than once a day.

It is painfully-amusing (if such a compound word is admissible) to hear a nervous female, whose sole exercise consists in going from the parlor to the kitchen once or twice a day, and in making a brief shopping excursion once a week, complain that she cannot maintain her strength unless she eats freely twice a day of meat, and takes her free potations of strong coffee and wine.

A like opinion prevails generally among the feeble who are not obliged to labor. The child in its nurse's arms, must daily, it is thought, suck a piece of chicken or beef steak in order to thrive. Children thus fed, have their blood constantly inflamed, and stand a poor chance when attacked by scarlet fever. The little master or miss who attends school, complains of headache, and grows pale, feeble, and nervous. The books are blamed and thrown aside for

what the dishes have done. The doctor is called in, and assured that the dear child can eat nothing but a little fat broth, a custard, or cake; and if he prescribe a diet of plain bread and milk, he is believed to be heartless, and his prescription is not followed.

The Majority of Mankind Eat no Flesh. — All such misguided persons should be apprized that the great majority of mankind eat no flesh, because they cannot afford it. And they do not appear to suffer from its loss. Millions of Irish do not taste of flesh or fish from one month's end to another. Potatoes, oat meal, and cabbage constitute their chief diet. Rice, poor as it is in nourishment, sustains, when combined with vegetable oil, millions of people in Asia. The Lazaroni of Naples, with active and finely moulded forms, live on bread and potatoes. These facts do not afford ground for altogether rejecting animal food, any more than Bayard Taylor's statement respecting whole tribes in Africa who live upon flesh, furnishes a reason for excluding vegetable aliment. Man may live and enjoy health upon either, but his organization implies the use of both.

Proportions of Animal and Vegetable Food.

Upon this subject, it is impossible to fix any absolute rules. This is a point which must be determined by the temperament, the state of the health, the constitution, etc. Persons of a scrofulous habit should eat freely of animal food. But an inflamed stomach should never be tormented with flesh. Meat is stimulating, and will be almost sure to do mischief when there is heat and tenderness at the pit of the stomach. There are cases of inflammation of this organ, in which it may be necessary to live on bread and milk, with articles of the *starch group*, for months, and even for years.

On the other hand, when the system has run low from some exhausting disease, which excites no feverish action, it may be necessary at times, to take a diet almost exclusively animal.

It is absurd to talk of the same diet as adapted to all persons, even when in health. As well might we expect one shoe to fit every foot, or one coat every back, or one color every eye, or one doctrine every mind.

Temperance the Main Thing. — After all, the great thing to be aimed at is temperance. It is not so necessary to reject one article and use another, as to partake of all with moderation. "I do not live to eat and drink; I eat and drink to live," said a wise philosopher of the olden time. One would think the moderns had reversed this rule. A modern table has the appearance of being spread for the purpose of inducing men to eat all their stomachs will hold. A man who can dine daily, for half a dozen years, at one of our first class hotels, and then find himself free of dyspepsia, and all other diseases, must have a fine constitution, as well as most admirable control over his appetite. Mr. Addison said, "When I behold a full table set out in all its magnificence, I fancy I see gout, cholic, fevers, and lethargies

lying in ambuscade among the dishes;" to which he adds, with much truth, in another place, "Abstinence starves a growing distemper."

Good Results of Temperance. — A temperate diet has always been attended with excellent results, and always will be. There are times of great anxiety, when abstinence should be pushed to the extreme verge of endurance. During the siege of Gibraltar, Lord Heathfield, its gallant defender, lived eight days on four ounces of rice per day. Dr. Franklin, when a journeyman printer, lived two weeks on bread and water, at the rate of ten pounds of bread a week, and was stout and hearty. Dr. Jackson, an eminent physician in the British army, says, "I have wandered a good deal about the world, and never followed any prescribed rule in anything; my health has been tried in all ways; and by the aids of *temperance* and hard work, I have worn out two armies, in two wars, and probably could wear out another before my period of old age arrives."

Lord Bacon was right in the opinion that intemperance of some kind or other destroys the bulk of mankind, and that life may be sustained by a very scanty portion of nourishment. Cornaro, whom I have before mentioned as having lived fifty-eight years on twelve ounces of solid food a day, wrote as follows respecting himself in his eighty-fifth year: "I now enjoy a vigorous state of body and of mind. I mount my horse from the level ground; I climb steep ascents with ease; and have wrote a comedy full of innocent mirth and raillery. When I return home, either from private business or from the senate, I have eleven grand-children, with whose education, amusement and songs, I am greatly delighted; and I frequently sing with them, for my voice is clearer and stronger now, than ever it was in my youth. In short, I am in all respects happy, and quite a stranger to the doleful, morose, dying life of lame, deaf, and blind old age, worn out with intemperance." Howard, the philanthropist, fasted one day in the week; and Napoleon, when he felt his system unstrung, suspended his meals, and took exercise on horseback.

Nothing can be plainer than the duty of fasting, when the stomach, having been overworked, is disinclined to receive food. Brutes invariably follow this suggestion of nature; they never eat when sick, — probably because they have no silly nurses to coax them to swallow stimulating aliments. The habit of putting high-seasoned food into the stomach when it is inflamed and feverish, is about as wise as directing streams of blue, violet, or red light into the eye when it is red and swollen with inflammation.

Tea and Coffee.

It is proper before closing this chapter upon diet, that something should be said respecting the beverages of tea and coffee.

Some twenty years ago, more or less, a meeting was held by the leading physicians of a city in the old world, in which the merits of tea and coffee were discussed. In this discussion each man first stated his experience in the use of these articles, and then con-

structed his argument according to that experience. The amount of what the reader could learn from the discussion was, that Dr. A. had used tea all his life, and been benefited by it, while coffee had uniformly injured him; and that he thought tea should be used, while coffee should be rejected; — that Dr. B. had taken coffee at breakfast, and found it an excellent support to the stomach and nervous system, while tea had disturbed his digestion and his mind; and that the former was a beverage of excellent qualities, while the latter was detestable; — that Dr. C. had always drank both tea and coffee, and recommended them to everybody; — and that Dr. D. had himself never been able to indulge either tea or coffee, and would have them both expelled from every household.

The discussion was not creditable to the learned and really able men who participated in it. The arguments were all based upon the miserably narrow basis of single individual experiences. They were no more valid than that of the man who should hold up a shoe, declaring it fitted his foot the best of any he ever had, and recommending all men to have their shoes made upon the same last.

The truth is, there is but one thing which can be affirmed universally of the effect of tea and coffee. They both, when taken, tend to prevent waste in the body, and, consequently, less food is required when they are used. This may be affirmed of them in their applicability to all persons, but nothing further. The truth is, some can drink tea but not coffee, and some coffee but not tea; some can use both, and some neither. Every man's susceptibility to the effects of these beverages is his own, as much as his susceptibility to the effects of light, or heat, or atmospheric changes; and these effects, each person must learn from experience. Coffee often produces, and generally aggravates, a bilious habit, — an effect which cannot, I believe, be traced to the use of tea. **I have no doubt but that many cases of confirmed dyspepsia are traceable to the use of coffee alone.**

Water.

There is one universal beverage; it is water. All men are fond of it. In sickness and in health, in joy and sorrow, in summer and winter, in cold climates and in hot, man loves and drinks water. The stomach, abused and made sick by stimulating food and drinks, and repelling everything else, still gratefully opens itself to water. Wherever man exists, therefore, or wherever he should exist, water is found, either in the form of springs, or running brooks, or rivers, or ponds, or lakes; and even where it is not found in some of these forms, it is periodically dropped down from the clouds. As there is no element in nature more necessary for man's existence than water, so there is none more universally diffused.

Pure Water Essential to Health. — But water varies very materially, both in its physical qualities, and in its adaptation to its purposes. Pure water is as essential to health as pure air. When either of these fluids is rendered impure by mixture with foreign matters, disease will be a frequent result. The ancients must have been influenced by this fact, or they would not have incurred such heavy expenses in

procuring pure water from great distances. The strong aqueducts through which, for many miles, large streams of water are at this day poured into fallen Rome, attest the freeness of the expenditures she made for this purpose in the day of her renown. We may pity the ancient Romans for being governed in their military operations by the opinions of augurs and soothsayers, and certainly these things were silly enough; but in other things, at first view equally superstitious, they showed practical wisdom. Vetruvius reports that in selecting the sites of their cities, they inspected the livers and spleens of animals to learn the salubrity of the waters and the alimentary productions of the region. The size and condition of these organs do in fact indicate the nature of the pasturage and the qualities of the water with which animals are supplied. No people can enjoy good health, when subjected to the double influence of bad water and impure air.

Division of Water.—The simplest division of water is into two kinds, soft and hard. Rain, river, pond, and snow water is soft: well and spring water is generally hard. Soft water contains but little impurities, and when used for washing, forms a good lather with soap. Hard water contains at least one of the salts of lime, often more; mixed with soap, it curdles and turns white. The reason of this is, that the oily acids of the soap unite with the lime, and form a compound which the water will not dissolve. Such water is not suitable for domestic purposes.

Chemical Nature of Water.—Water contains, reckoning the elements of which it is composed in volumes, one volume of hydrogen, and half a volume of oxygen. These two gases, the unlearned reader will please to remember, are highly subtle bodies, *not visible to the eye;* and yet, when chemically united, they form a liquid which covers two-thirds the entire surface of the globe,—floating upon its bosom the navies and merchant ships of all nations, and, by its unmeasured depths, and vast breadths, and sublime movements, fills the thoughtful mind with conceptions of creative Power, which words never attempt to express. Should the two gases which compose this vast body of water cease to love each other, and fall asunder, the first lighted taper would set the world on fire, and not a living being upon its surface could escape destruction.

Impurities in Water.—It is not surprising that a fluid with as great a solvent power as water, should often dissolve and hold in solution a great many impurities. In passing along through the earth, before it comes up in springs and wells, it is filtered through various mineral earths, and becomes contaminated accordingly. In running through beds of limestone, it takes up a little carbonate of lime. Salt beds impart to it common salt (muriate of soda), while sulphur and other ores tinge it with salts of various kinds.

Water from the wells of Boston, formerly used by the inhabitants, was largely impregnated with common salt, and other mineral substances. So marked was the saline taste, from this cause, that the New-Yorkers and Philadelphians used to say the Bostonians, when visiting their cities, had to salt their water.

Cochituate Water. — These wells, which so long yielded up brackish water to offend the palates of strangers, are now abandoned, and Boston is blessed by a copious stream of pure soft water, drawn through a fine aqueduct from Cochituate Lake, twenty miles distant. This water is distributed to about every house and shop in the city.

The result is, that the health of the citizens has been materially improved. Fevers, particularly those of the typhoid type, have diminished, both in prevalence and fatality. The decaying vegetable and animal matter, so much of which gets into the common sewers, and which, in former years, sent up poisonous gases to attack the life of the citizens, are now washed away by the soft water, which is daily and hourly dropping through the sinks of all the dwellings of the city.

Schuylkill and Croton Waters. — The Schuylkill water, introduced into Philadelphia, and the Croton, brought from quite a distance to New York, are both good waters; though neither, as chemical analysis has shown, is quite as pure as the Cochituate, of Boston.

Lead Pipes. — In each of these three cities, water is conveyed through the dwellings in leaden pipes, — a practice fraught with a danger to which the inhabitants should not expose themselves. That lead does often become oxidized and impart its poisonous properties to water when long in contact with it, is a well-known fact. Let a number of persons drink every morning from the first water drawn from the pipes, and a portion of them will be attacked with some form of lead disease. The pipes should be emptied every morning, before using the water for domestic purposes; and then, it is true, there is little danger. But where the work in the kitchen is done by hired persons, who have no appreciation of the danger, how is it to be known whether this act of safety is always carefully performed? Water pipes should certainly be made of some other material.

Physical and Other Properties of Water. — Good water is without smell, is perfectly clear, and in the mouth, has a soft and lively feel. When poured from one vessel to another, it should give out air-bubbles. Boiled and distilled waters have a vapid, flat taste. This is owing to their containing no carbonic acid gas or atmospheric air, — these being driven off in the act of boiling and distilling. A hundred cubic inches of good river water contains about $2\frac{1}{4}$ of carbonic acid, and $1\frac{1}{4}$ of common air.

Carbonic acid is what gives to mineral, or soda water, its brisk, and even pungent taste. Without a portion of this acid and atmospheric air, water is perfectly insipid, and not fit to be used as a beverage. Hence, if it be boiled or distilled to clear it of earthy matters, we must expose a large surface of it to the air, and shake it, that it may re-absorb from the atmosphere, what it has lost, and thus recover its taste.

Rain Water is the Result of Distillation on a large scale, and would be insipid, like other distilled water, only that, after being distilled off

from the waters upon the surface of the earth, it recovers, while ascending as vapor, the carbonic acid and atmospheric air.

Fishes breathe air as well as land animals, and hence, lakes upon the tops of high mountains, where but little oxygen can be absorbed into the water from the air, are not inhabited by the finny tribes.

The Saltness of the Ocean is simply the accumulation of the saline substances washed out of the bowels of the earth.

The water which for thousands of years has been distilling off as vapor, from the surface of the ocean, is nearly pure. Being carried by the winds to the continents, it falls as rain, sinks into the earth, is filtered through mineral substances, comes to the surfaces in springs, is collected into rivers, and, with all its freight of mineral salts, is borne back to the ocean. Everything that water can dissolve, and carry down from the continents, finds a great depository in the ocean; and as this has no outlet, the accumulation must go on without limit. Rivers which flow into the ocean, contain from ten to fifty grains of salts to the gallon, — composed chiefly of common salt, sulphate and carbonate of lime, magnesia, soda, potash and iron; and these are the constituents of sea-water. The time must come, in the history of our globe, when these salts will render the water of the ocean so dense that a man can no more sink in it than a cork can sink in fresh water.

Cleansing of Impure Water. — Impure waters should be cleansed before being used for domestic purposes. Distillation is the most perfect method of purification. Filtration through sand is a good method. It removes all suspended vegetable or animal matter, and all living animals. Boiling likewise kills all animals, and throws to the bottom carbonate of lime. It is this which constitutes the crust which lines tea-kettles in all regions where limestone exists.

Settlers in a new country, should make it a prime object to find good water. This is of great moment. Their own health, and the health of their posterity is dependent upon it. Any soil, good or bad, is not worth half price, if it yield impure water.

Reasons for Prizing Water. — Finally, we ought all to prize water very highly, for it *composes nearly eight-tenths of our entire bodies*, including our flesh, blood, and other fluids. Nay, we owe to it the very softness, delicacy, and smoothness of our persons. Our muscles, nerves, blood-vessels, glands, cartilages, etc., all play smoothly upon each other in consequence of water. Take all the water out of us, and we should be dry sticks indeed. All our comeliness would be gone. Nobody would or could love us. We should be walking reeds, shaken and sported with by every wind. Let us never forget how much we are indebted to water.

Exercise.

Animal life is conditioned upon exercise. Without it health cannot exist, or life itself be continued for any great length of time.

Proper exercise communicates motion to every part susceptible of it. It expands the breast, contracts and relaxes the muscles, quickens the motion of the blood, moves afresh all the other fluids, and stirs to the centre the whole frame. More easy and perfect digestion, the nutrition of every part, and the proper performance of all the secretions and excretions, are the results of such exercise.

A distinguished physician said: "I know not which is most necessary to the support of the human frame, food or motion." Some of the finest talents in the world are probably lost for the want of exercise; for without it the mind loses its keen perception, and its bounding energy; its power of application and its general scope. If men of great talents would give attention to exercise, the world would reap a larger harvest from their written thoughts.

The arrangements of modern society have very much abridged the facilities for taking exercise; but if Trenck in his damp prison, with fetters of seventy pounds weight upon him, could preserve his health by leaping about like a lion, most persons could do as much with the fetters of modern *society* upon their limbs.

Must be Regular. — Exercise, to be of much service, must be regular, — not taken by fits and starts, — a good deal to-day and none to-morrow; but in reasonable measure every day. Occasional efforts, with intervening inactivity, only does mischief.

Must be Pleasurable. — It should be connected, too, if possible, with some pleasing occupation or pursuit. The movement of the limbs should carry us towards some place or end in which the mind feels an interest; exercise will then do us most good. Hence, botanical pursuits, the cultivation of a garden, and the like, are often preferable to a solitary and aimless walk.

Must not be Excessive. — Exercise should never be carried so far as to produce great fatigue. Extremes are injurious; and too much exercise, especially by a sick or feeble person, may be as injurious as too little.

No clothing should be thrown off after exercise, nor should one cool off by sitting in a draft of air. Very serious consequences often follow this practice.

Not to be Taken After Meals. — It is not best to take exercise immediately after meals. The reasons for this caution have been explained. It is true many laboring men go at once to their work after eating, without apparent injury. Yet they are strong, and can endure what those who use their brains chiefly could not. And even they do not labor as easily and cheerfully immediately after dinner.

Active and Passive. — Exercise is properly divided into active and passive. Walking, running, leaping, dancing, gardening, various sports, etc., are active. While sailing, swinging, and riding in carriages, are passive. Riding on horse-back is of a mixed nature, — being both active and passive.

A few remarks upon these several kinds of exercise, will have a practical value to some of the readers of these pages.

Walking is one of the most gentle, easy, and generally one of the most useful of the active exercises. It is within the reach of all who have the use of their limbs, and is indulged at the expense only of a little shoe leather. To make it agreeable, the face is only to be turned to some favorite locality, and the mind put in communion with the voices of nature.

To walk with the best advantage, the body should be kept upright, the shoulders thrown back, the breast projected a little forward, so as to give the lungs full play, and the air an opportunity to descend to the bottom of them. This attitude places all the organs of the body in the most natural position, and relieves them from all restraint. Walking then becomes a source of pleasure. The artist who bends over his pallet, and gets into a cramped position, is by this kind of walking relieved, and his body kept upright. Females, particularly of the wealthier class, are much more apt to neglect this species of exercise than males.

It is not so in England. There it is no uncommon thing for ladies of high rank to walk ten miles a day; and they do it in shoes of sufficient thickness to protect their feet from all dampness, and in clothes large enough to give their muscles full play. As a consequence, they enjoy excellent health, and in many cases, even retain their freshness and beauty to old age.

A master of one of the vessels of our navy who spent some time, lately, in the British Channel, was several times invited to spend the evening at Lord Hardwick's, where he made the acquaintance of two daughters of his lordship, who, in the drawing room, he thought the most accomplished ladies he ever saw. Yet those young women, on two occasions, in company with other friends, walked miles to visit his vessel, once on a rainy day, clad in thick, coarse cloth cloaks which no rain could penetrate, and caring as little for wet weather as a couple of ducks.

Good for the Studious. — For the studious, walking is a most capital exercise. It varies the scenes so constantly, and brings the mind in contact with so many objects, that the monotony of in-door life is admirably broken. It was a maxim of Plato, that "he is truly a cripple, who, cultivating his mind alone, suffers his body to languish."

Good in Cold Weather. — Walking is valuable in cold weather, because it exposes one to the cold atmosphere, and hardens the person against frosty weather, — a consideration of great consequence in countries which are subject to extremes of cold.

Running and Leaping are forms of exercise which should be indulged with prudence even by the young and healthy. For the feeble and the aged, they are entirely inadmissible. Used cautiously, in a system of regular training, they may help raise the bodily powers to a high degree of agility and endurance. The North American Indian, who is bred to the chase, runs with surprising swiftness, and for endurance is scarcely excelled by his faithful dog. What training does for the Indian, it may do for the white man, who may chance to inherit as good a constitution.

The Game of Ball requires very active running, and for the young, it is an exceedingly healthful amusement. It fills the whole frame with a bounding spirit, and sets the currents of life running like swollen brooks after heavy rains.

Gymnastics. — The more active species of exercise have generally been included under the term gymnastics. Among the Greeks and Romans, feats of strength and endurance were supposed to confer honor. For this reason, and because war was a laborious calling, requiring bodily endurance and strength, their youth were trained in the most active exercises. Gymnastic games were with them at once the school of health, and the military academy.

In England, during the middle ages, acts of parliament and royal proclamations were employed to regulate and foster those manly sports and exercises, which fitted the people for the activity required on the field of battle.

Those preparations for brutal wars would be unsuited to the present state of the world; but the capacity for endurance which these trainings produced, could be most usefully employed in the laborious and scientific researches which modern advancement requires. Very few of our scientific men have sufficient hardness of frame to sustain them in their laborious studies.

The heart diseases which prevail so extensively are the result, many of them, of violent exercise, taken, perhaps, from necessity, and proving injurious because not a matter of every-day practice. Violent exercise, more than any other kind, must be regular in order to be borne.

Needed by Young Women. — Gymnastic exercises, and calisthenics, are particularly needed by our young women, to give them something of the robustness of our mothers, two generations back. For the want of them, they are dwindling away, and becoming almost worthless for all the purposes for which they were made.

In view of this want, I cannot but express my gratification here, that a high school for young ladies is now open in this city, under the care of the Rev. George Gannett and his lady, in which a large and suitable room is set apart for the daily practice of calisthenic and gymnastic exercises, suited to the age and strength of each pupil, under the instruction of an experienced teacher of their own sex. I cannot but look upon this school, offering, as it does, the highest advantages for a complete education in science and morals also, as the beginning of better things.

Moderns Physically Inferior to the Ancients. Reason for it. — It is evident that the moderns are inferior in bodily strength to the ancient Greeks and Romans. Before the introduction of Christianity, men knew very little about the future, and therefore strove to make the most of the present. Hence, they took measures to ensure health and long life. It is true that a due regard to the welfare of the future, need not, and should not, prevent a care for the present; but from various causes, to be referred to on a subsequent page, such has been the practice, to the manifest physical injury of the race.

Dancing, when hedged about with proper restrictions and limitations, has great advantages as a physical trainer of the young. There are very few forms of exercise which give so free a play to all the muscles, and at the same time so agreeably interest the mind. Begun in early life, and pursued systematically, dancing imparts a grace and ease of motion which nothing else can give. For this reason alone, it should be cultivated as an art.

Every man and woman is often placed in circumstances in life where the possession of an easy carriage of body, and an unembarrassed manner, would be prized above gold. One's personal influence in the world is greatly increased by an easy, graceful manner. We all know how a polite manner wins, while a rough and uncouth one repels us.

Warning Against Excess. — While dancing has many things to recommend it, there are also several considerations which should warn us against using it to excess, particularly in the ball saloons of fashionable life. So many muscles are called into play, the breathing is so much quickened, and the air breathed is often so impure, that the circulation of the blood is hastened almost to fever excitement. And when to this we add the use of wines and cordials, alternated with ices and iced drinks, and the exposure, on returning home from balls, to the chill night air, under the miserable protection of insufficient clothing, we have draw-backs enough to abridge, if not to annihilate the benefits derived from this otherwise healthful and elegant exercise.

But then it will be said, and truly enough, that these are the abuses, not the uses of dancing. To these abuses, no parent should permit the health of a child to be exposed. In the parlor at home, in connection with a few young friends gathered in to spend an evening; or, in a well-ventilated hall, under the instruction of a master of known character and refinement, dancing is of high utility, and much may be said in its favor. An amusement for which there is so general a fondness, one may say, passion, must be fitted to meet some want of the animal economy, and perhaps of man's higher nature.

Grace of motion gratifies our sense of the beautiful, and in its nature is allied to poetry. Turning away from the abuses of dancing, let the reader thankfully use it as one of the very best physical, social, and æsthetical educators of youth.

But if dancing is salutary, it is only when every limb and muscle is allowed to participate naturally and without restraint in the general motion. When performed in a dress so tight as to restrain all freedom, not only is every grace destroyed, but injury of a serious character may be the result.

The Cultivation of a Garden is also a species of exercise highly conducive to health. To the poor it should have a double attraction. It is not only a healthful exercise, but it yields, in its season, many wholesome vegetables, the price of which, when they have to be purchased, frequently puts them beyond the reach of the poor. It is pleasant to know that in the towns of Massachusetts, where shoes are largely manufactured, most of the workmen own small pieces of

ground which they cultivate as gardens, — deriving health both from the labor, and from the vegetables raised. This is one of the kinds of exercise which are more beneficial from having an end in view. The man who works in his garden derives pleasure from the improvement he is making upon his ground, and from the prospect of advantage to himself and family.

Other Active Exercises. — To the exercises already spoken of may be added those which are mostly taken indoors, — the dumb-bells, jumping the rope, the battle-door, etc. They may be resorted to when the weather is stormy, or when any other cause may prevent one from going into the open air. Nevertheless, as promoters of health, they are inferior to those exercises which take one out under the open sky. They are too mechanical in their nature, and have too little aim, to be allowed to take the place of the preceding.

Passive Exercises.

Sailing. — This, to many persons, is among the most pleasurable and exciting of the passive exercises. But the excitement arising from the motions of a boat, sometimes, in case of timid persons, degenerates into *fear*, which is injurious. Young gentlemen who manage the boat upon sailing excursions, should never put on too much sail in a brisk wind, and torment the ladies by exciting their fears, as their own amusement may be in this way purchased at the cost of others' health, — a result far enough from their thoughts or intentions, but not the less real.

Swinging. — The sick may sometimes indulge in this exercise, when capable of enduring no other. To swing gently has a soothing effect, and often allays nervous irritability in a way which nothing else can. It is like the lullaby motion of the cradle. It calms and soothes.

Nervous children and grown persons in feeble health, are sometimes, by roguish boys, swung too high, and very much excited and alarmed. This is wrong. It may do great injury. Very few boys would do it if they knew the evil consequences. Boys and girls are generally kind hearted; and though they may like to hector others, they will seldom knowingly *injure* them for their own amusement.

Carriage-Riding. — The advantages to be derived from this species of exercise are probably rated too high. For feeble persons, just recovering from illness, who cannot endure walking or riding on horseback it is valuable, particularly if taken in an open carriage. But for those who have more strength, it is less desirable than many other exercises. True, it is generally an *agreeable* mode of locomotion, and for this reason, it is generally more serviceable than the small amount of exercise afforded by it would lead one to suppose.

Carriages are luxuries, and like all other luxuries, they are apt to bring on debility, and perhaps shorten life. A man is apt to order his carriage to the door at the time when increasing wealth enables him to retire from the active pursuits of life, — the very moment when

he is most in need of some exertion to take the place of that to which he has been accustomed. Yet so it is, luxury comes to enfeeble, at the time when we need something to harden us.

Could rich men be persuaded to let their luxuries consist, in part, in doing good, and like Howard, find pleasure in travelling on foot to visit those who are sick and in prison, they would be surprised to see how their happiness would be increased.

Close carriages are generally used by the wealthy. They at best contain but little air, which is breathed over and over, and becomes unfit for respiration. The windows of such carriages should always be open, except in rainy weather, when the latticed windows only should be used.

Riding in Sleighs furnishes an agreeable excitement, and may be indulged to some extent with advantage. Yet it can be had only in cold weather, and persons who partake of its pleasures, should be careful to wear clothing enough to protect themselves against the frost. This is the more necessary, as very little motion is communicated to their bodies by the sleigh.

Horse-Back Riding. — This form of exercise may fairly rank next to walking; in some states of the system, it is preferable. It justly holds a high rank as an exercise for *consumptive persons.* Many a man, and woman too, has been benefited by it when suffering from lung disease. For those who have *hernia*, or falling of the bowel, it is not proper, as the most serious consequences may result from its use.

The Horse should be Owned. — A feeble man who rides on horseback should, if possible, own his horse; for, becoming attached to him, as he generally does, he will be able to ride farther than upon an animal in which he feels less interest. A horse is a noble creature, and a man who loves him, will sometimes acquire a passion, almost, for being upon his back, and witnessing his splendid performances.

Pleasurable Exercises Most Beneficial. — Finally, those exercises are most beneficial, and can be longest endured, in which we feel the greatest interest. Place before even a feeble man some desirable object, and he will endure a great deal to reach it; or engage the mind of a very tired person in something which greatly interests it, and considerably more exertion will be easily borne. This is well illustrated by the story told by Miss Edgeworth of a certain father, who had taken a long walk with his little son, and found the boy apparently unable to walk further, some time before reaching home. "Here," said the shrewd-minded father, "ride on my gold-headed cane." Immediately the little fellow was astride the cane, which carried him as safely home as the freshest horse.

Mental Co-operation is of the highest importance in all exercise. Men who are paid by the job, work with far more spirit than those who are paid by the day. One would dig in the earth with very little spirit, if he had no motive for doing it; but if he expected with every

shovelful of earth to bring up gold-dust, he would not only work with a will, but would endure a great deal more labor. From these considerations we may infer that those farmers and manufacturers, who pay their men the highest wages, make the most money on their work.

The best time for taking exercise is that in which it does us most good. For most persons, the morning hours may be considered most favorable. But there are many who cannot take exercise in the early morning, without suffering from it through the whole day. Some are able to walk miles in the afternoon, who would be made sick by similar exertions immediately after rising.

Persons often injure friends who have this peculiarity of constitution, by urging them out in the morning. They do it from good motives, but are, nevertheless, blameworthy for attempting to advise in matters which they do not understand.

Rest and Sleep.

Our bodies are like clocks; they run down and are wound up once every twenty-four hours. Were they obliged to work on uninterruptedly, they would wear out in a few days. It is a merciful provision that periods of repose are allotted to us. Everything has its proper place. Rest is not less a luxury after exercise, than exercise is after rest. They both confer happiness at the same time that they promote our well-being.

Sleeping Rooms. — The largest part of our rest is taken in sleep. Of course the kind of room in which we sleep is worthy of consideration. Hufeland says: "It must not be forgotten that we spend a considerable portion of our lives in the bed-chamber, and consequently that its healthiness or unhealthiness, cannot fail to have a very important influence upon our physical well-being." It should at least be large. That is of prime importance, because, during the several hours that we are in bed, we need to breathe a great deal of air, and our health is injured when we are obliged to breathe it several times over. We should at least pay as much attention to the size, situation, temperature, and cleanliness of the room we occupy during the hours of repose, as to the parlors, or drawing-room, or any other apartment. And yet how different from this is the general practice of families. The smallest room in the house is commonly set apart for the bed and its nightly occupants.

The sleeping-room should have a good location, so as to be dry. It should be kept clean, and neither be too hot nor too cold. And more important still, it should be well ventilated.

One bed, occupied by two persons, is as much as should ever be allowed in a single room; though, of course, two beds in a large room, are no more than one in a small one. Both are objectionable.

Fire in Sleeping Rooms. — As to having fire in a sleeping room, that is a matter to be determined by the health of the occupant. Persons who have poor circulation, and are feeble, had better have a

little fire in the bed-chamber, in cold weather. For those in good health, a cold room is preferable.

Open Windows in Sleeping Rooms. — In the hot weather of summer, it is better to keep the windows open to some extent, through the night, but not on opposite sides of the room so as to make a draft across the bed.

There is a difference of opinion as to the safety of this practice; but the experience of those who have used it prudently and perseveringly, has generally sanctioned its employment. It is presumed that night-air is made to be breathed; and if we breathe it habitually, there is no good reason why it should be considered hurtful. At all events, we have got to do one of three things, — either breathe it, or be poisoned by air which is breathed several times over, or use very large sleeping rooms, and thus lay in a stock to last over night.

An Open Fireplace in a bed chamber will do much towards its purification. It carries off foul air. But many persons board up this outlet as if bad air were a friend, with whom they could not think of parting. At the same time, they will carefully close all windows and doors, as if fresh air were an enemy not to be let in.

Beds. — It is a pleasant thought that while so many things which injure health are coming into fashion, some which have a like effect are going out. Among the injurious things which are silently withdrawing, are feather beds.

In earlier times, a bed made of eider-down was thought to be a great luxury, to be carefully preserved, and handed down from mother to daughter. Beds made of hens' feathers, and other coarser kinds, were thought to be only fit for children. With due deference to these earlier judgments, it must be said that feather beds, whether downy or coarse, are not even fit for children. They are composed of animal matter, and by a slow process of decay, are always, when stirred, sending up an exhalation which it is not healthful to breathe.

By their softness, too, they increase the general tendency to effeminacy. In warm weather, they are too heating. To sink down into them, and lie nearly buried all night, is to insure a feeling of lassitude and debility in the morning. Only the strongest persons can endure it without being made conscious of the evil effects.

Beds must not be too Hard. — On the other hand, it is almost equally unwise to choose a bed of absolutely unyielding hardness. When very tired, we may rest even upon a board; but sleep will generally be more sound as well as refreshing, if the bed be somewhat yielding. The hair mattress is the very best bed yet used. It is healthful and easy. No person once accustomed to it, will ever return to feathers. In summer, it is a luxury; in winter, it is sufficiently warm, though a little more covering is needed than with feathers.

Bedding. — In hot weather, linen sheets are preferable to cotton, and of course will be used by those who have ample means. But

cotton ones are good enough, and in winter are decidedly the more desirable of the two. Cotton is best, too, for those who suffer with rheumatic affections. For external covering, comfortables are objectionable, because they do not let the insensible perspiration pass off as freely as it should. They are light, however, and so are rose blankets, which have the additional good quality of being porous. We should sleep under as few clothes as possible, consistently with comfort.

Night Dress. — The flannel, cotton, linen, or silk, worn next the skin through the day, should always be replaced, on retiring, by a suitable night-dress. This should be of the same material with that which is taken off. If we wear flannel through the day, we need it quite as much at night.

Do not Cover the Face. — The practice of sleeping with the face entirely covered with the bed clothes, is very injurious. It compels one to breathe the air over several times.

Natural Position for Sleep. — The most natural position in which to sleep is upon the right side. This affords the easiest play to the internal organs. It is best, however, to learn to sleep in different positions, and to change occasionally from side to side. Upon the back is not so easy a position. To lie in this way obstructs the circulation of the blood, by the pressure of the stomach, bowels, etc., upon the large blood vessels which pass down and up in front of the back bone. *It is very tiresome and injurious to lie with the hands above the head.*

Amount of Sleep. — The average amount of sleep required by persons in health, is from seven to eight hours. Occasionally we find persons who get along very well with six, or even five hours; while some, even in health, require nine. There is no absolute standard for all persons, in the amount of sleep, any more than in that of food. It depends on the temperament, the constitution, the amount of exercise, and the exhausting nature of the mental application.

The object of sleep is to repair the energies; the extent to which they are wasted, and the recuperative power possessed, will measure the amount required.

Late Suppers. — These are a bar to all sound and healthful sleep. The last meal should always be taken at least three hours before retiring, and should be light. During sleep, the stomach should have a chance to rest. It will work the better on the morrow. Some persons boast that they can sleep perfectly well after a heavy supper. Perhaps they can; but, as Franklin has wisely suggested, they may by and by "have a fit of apoplexy, and sleep till dooms day." This will be sleeping *too well!*

Preparation for Sleep. — Dr. Franklin left behind the record of a wise life, as well as many excellent moral and philosophical directions. A good conscience was his prescription for quiet sleep and pleasant dreams, — a most excellent direction. Sleep is promoted,

too, by withdrawing the mind, a short time before retiring, from all hard study, and exciting themes of conversation; and turning it to calmer subjects of reflection, such as the moral attributes of God, — particularly his love and paternal character.

Objects of Clothing.

The clothes we wear are intended, or should be intended, to secure three objects, — *warmth in winter, coolness in summer, and health at all times.*

It has already been shown that our bodies are warmed by their own internal fires. In the lungs, in the skin, and indeed in all parts of the body, oxygen unites with carbon and other combustible matters, producing heat in the same way that it is produced in a grate where anthracite coal is burned; and as our temperature always needs to be kept up to about 98° of Farenheit, it follows that this combustion must always be going on.

Now, the atmosphere which surrounds us is always receiving into itself the heat which comes to the surface of our bodies, and thus robbing us of our warmth. In summer, the atmosphere, full of the rays of a burning sun, may impart heat, instead of taking it away; while in winter, it takes more than it gives, and would cause us to perish with the cold, were it not for the protection afforded by our clothing.

Clothes, of course, have no power to manufacture or impart heat. They only retain, and keep in contact with our bodies, that which is generated within us. If we have on a single garment which is made tight at the bottom and top, so that no current can pass up or down, there will be a layer of air between it and the body, which, becoming immediately heated, and being retained there, helps keep us warm, or rather, prevents us from being cold. With every additional garment put over this, there is another layer of heated air, adding still more impenetrable guards against either the intrusion of cold, or the escape of internal heat.

Bad Conductors of Heat. — But, that our clothes may thus retain our warmth, and prevent its dispersion, they must be *bad conductors of heat,* — that is, they must not readily take up the heat and convey it away from the body. They must slowly absorb the caloric into their own substance, and then retain it tenaciously.

Linen, which is so universally popular in temperate climates, as an article to be worn next the skin, is unfortunately a good conductor of heat. It does not afford a warm garment. It conducts heat rapidly away from the body. Hence it always feels cool to the touch. It is really no colder in itself than other kinds of cloth, but it is solely the rapidity with which it conducts heat away from the body, that gives it the feeling of coldness. It has other qualities which compensate, in some measure, for this defect. The fibres of which it is composed, are

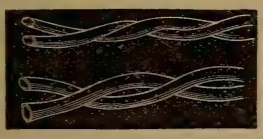
Fig. 67.

round and pliable, which make linen cloth smooth and soft, and the sensations produced by it, upon the skin, altogether agreeable. Figure 67 represents a fibre of linen, as it appears under a microscope which magnifies it 155 times.

Cotton is warmer than linen, because it is a *worse conductor* of heat. The perfection to which its manufacture has been carried, makes it almost a rival of linen in softness and pliability. It does not absorb as much moisture as linen, and therefore better retains its powers as a non-conductor.

But then the fibres of cotton are not round and smooth, like those of linen, but flat and spiral, with sharp edges. Figure 68 represents two of its fibres, magnified 155 times. This renders cotton irritable to some very delicate skins. This is the reason why linen is better than cotton for binding up wounds, where there is tenderness of the surface.

FIG. 68.



Silk has a round fibre, like linen, which is even softer and smaller. It absorbs less moisture than cotton, and in its power of communicating warmth, it is superior to both the preceding. It forms the most desirable fabric for clothing that we have; but its cost makes it inaccessible to the great body of the people, except as a holiday dress for the ladies. Its culture in our own country, if once extensively established, would be a source of national wealth.

The Fibre of Wool is quite rough, almost scaly, and highly irritative to delicate skins. Figure 69 shows fibres magnified 310 times. It is not possible for some persons to wear it next the skin. But where this cannot be done it may be worn outside the linen or cotton; and being a good *non-conductor*, it will in this way preserve the warmth of the body, without either irritating the skin, or disturbing its electricity.

FIG. 69.

Wool, in cold climates, is one of the very best materials of which clothes can be made. In New England, and, indeed, in all cold and temperate regions, it should be worn by delicate persons, in the form of thick or thin garments, all the year round. It does not readily absorb moisture, and is a dry, warm, and wholesome material for clothing.

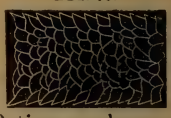
Hair. — Though not precisely in the line of these remarks, *hair* may as well be introduced here. Wool is in fact hair. Every part of the skin, with the exception of that upon the soles of the feet, and the palms of the hands, is intended to produce hairs. On most parts of the body, they are short and fine, hardly rising above the surface. Upon the head and the face, they grow to considerable length.

Hair, like wool, is a bad conductor of heat; and, as growing upon the head and face, is doubtless intended for some useful purpose. That it was designed as a warm covering, can hardly be doubted. The beard, when permitted to grow, is a natural respirator, guarding

the lungs against cold and dust. Mr. Chadwick noticed that blacksmiths who allowed their beards to grow, had their mustachios discolored by iron dust, which lodged among the hairs, and very justly inferred that the dust must have found its way into the lungs, and done mischief, had it not been arrested by this natural respirator.

That the beard, when long, does ward off a great many colds and throat ails, is too well known to be denied. It has required moral courage on the part of those who have broken away from the universal practice of shaving, for which they should be honored rather than ridiculed. For those who do not suffer from throat or lung complaints, especially if they are getting advanced in life, it may not be thought worth while to abandon the razor. Yet the change would not be regretted. Figure 70 is a human hair, magnified 250 times, showing its scaly surface.

Fig. 70.



The Color of our Clothing is a matter of some moment. The dark colors absorb the light, the sun's rays, and heat, much more than the lighter ones; and as those bodies which absorb heat well, are likewise good radiators, the *dark colors have the highest radiating power.* White reflects heat, and rays of light, and is a bad absorber and bad radiator. In summer it prevents the sun's rays from passing inward to heat the body, and in winter, interrupts the heat of the body in its passage out. In summer, it makes the coolest garment; in winter, the warmest one. These facts can be very simply illustrated, by laying, side by side, upon the snow, when the sun shines, two pieces of cloth, the one black, the other white. Lifting them up, after a time, the snow will be found considerably *melted under the black cloth, but not under the white.*

It is now seen that the object of clothing is not to impart heat to the body, but to prevent its loss; that it is not to create it, but to furnish the occasion for increasing its degree. It appears further, that clothing protects the body against the evil effects of changes of temperature, and that white garments, by reflecting, instead of absorbing heat, guard it against the heat of summer.

Clothing should be Porous.— All articles used for garments, should be *porous*, and permit the free passage of insensible perspiration. The skin receives oxygen through its pores, and gives back carbonic acid. It performs a sort of subordinate respiration. India rubber garments worn next to it, interrupts this, and must do mischief. Shoes made of this material, soon cause the feet to become damp and cold. The dampness is occasioned by the insensible perspiration, which cannot escape through the rubber. Such shoes worn in the open air, should be immediately taken off on entering the house.

Thin Shoes. — The defective way in which American females protect their feet from cold and wet, is a sore evil; and he who persuades them to adopt a wiser fashion, and cover their feet with better guards against colds and consumptions, will deserve the gratitude of the nation. We are in many things too fond of copying foreign fashions:

but if our ladies would, in this matter, follow the excellent example of English women, they would live longer, and leave a hardier posterity behind them.

The shoes worn by our females, high and low, rich and poor, are not thick enough to walk with safety upon a painted floor, hardly upon a carpet in an unwarmed room; and yet they walk with them upon cold brick side-walks, upon damp and frozen ground, and even in *mud*.

The result is, that they suffer from colds, sore throats, pleurisies, lung fevers, suppressions, inflammations of the womb, and many other ailments, which in early life, rob them of their freshness and beauty, of their health and comfort, of their usefulness to their household and the world, and leave them helpless in the arms of their friends, with a patrimony of suffering for themselves while they live, and a legacy of disease to hand down to their children. Would that they were wise in season! Some, to their honor be it said, have already adopted a safer course. It is hoped the evil will be gradually corrected.

Never attempt to mould the Form by Dress. — Parents commit a great error when they attempt to mould the forms of their children, particularly their daughters, by their dress. This cannot be done. It is the work of nature, and she wants no assistance in it. The great object of dress in childhood as well as in adult life, is to promote health. *With this*, there is not much difficulty in preserving the symmetry; *without it*, deformity is almost a matter of course.

The fact cannot be too often repeated, nor too seriously urged upon parents, that while the foundation of all graceful and just proportion of the different parts of the body must be laid in infancy, it cannot be done by tight bands, and ligatures upon the chest, and loins, and legs, and arms. Upon all these points, the garments of children should set easy, leaving the muscles at liberty to assume the fine swell and development which nothing short of unconstrained exercise can give. Could infants tell all the horrors they suffer from the restraints put upon them by tight dresses, it would make many a mother's heart bleed.

In these brief remarks, the principles are given which should guide us in the selection of our clothing. The intelligent reader will be able very easily to fill up the outline.

Bathing and Cleanliness.

Aristotle calls cleanliness one of the half virtues; and Addison, in the Spectator, recommends it as a mark of politeness, and as analogous to purity of mind. Both in the Jewish and Mohammedan law, it is enforced as a part of religious duty. Its requirement as a prerequisite to christian communion, would be wiser than the demands sometimes made. A dirty Christian may perhaps be found, but not among those who mean to be intelligent.

The importance of keeping the skin clean is not generally appreciated. The motive for cleanliness is often a lower and meaner one

than should be allowed to have place in the mind. Many persons would be mortified to have their hands, or face, or neck dirty, who do not wash their whole body once a year. That they may appear well in the eyes of others, is the only motive with such for keeping clean.

Offices of the Skin. — If we look a little at the offices of the skin, we shall better understand the need of keeping it clean.

The skin is not merely a covering to protect us from the weather. It is a living structure, curiously wrought, with a large extent of surface, and having important duties to perform in the animal economy. Its *structure* is more particularly explained under the head of "Anatomy" and "Skin Diseases." It has been already said, that it helps the lungs in breathing. It does many other things on which the health is dependent.

Number of Perspiratory Tubes. — The skin performs several kinds of secretion, — that is, it separates several things from the blood, — one of which is the perspiration, or sweat. The sweat is formed in small glands, situated just under the skin, and is brought to the surface in small ducts, or tubes, like the hose through which firemen throw water. These little tubes are spiral, as seen in cut 44, and run up through the two skins.

These spiral canals are very numerous, covering every part of the human frame, — there being about 2800 of them upon every square inch throughout the body; and as a man of ordinary size, has about 2500 square inches of surface, the number of tubes in the skin of one man is *seven millions*.

The mouths of these tubes are called the *pores of the skin.* Each one of these tubes is extended just below the skin; and there, among the cells where the fat is deposited, it, or rather the two branches into which it is divided, are wound into a coil, called the sudoriferous, or sweat gland. These ducts are each about a quarter of an inch in length, which makes an aggregate length of tubing in the human skin of about twenty-eight miles.

Insensible Perspiration. — Through each of these seven million of quarter inch hose, there is poured out, day and night, as long as a man lives, a stream of sweat in the form of vapor. When this is thrown off very rapidly, as happens when active exercise is taken, it accumulates in drops, and is called sweat. Ordinarily it does not thus accumulate; it is then called insensible perspiration, — not being recognized by the senses.

This transpiration may be proved very beautifully by inserting the naked arm into a long glass jar, and closing up the space around it at the mouth so that no air can get in. The inside of the glass will soon be covered with a vapor, which will grow more and more dense until it is converted into drops. Boerhaave says: "If the piercing chill of winter could be introduced into a summer assembly, the insensible perspiration being suddenly condensed, would give to each person the appearance of a heathen deity, wrapped in his own separate cloud."

Now, this continual exudation of sweat through these millions of tubes is for a wise and necessary purpose. It is to take out of the blood and other fluids various salts, which would do mischief if allowed to remain longer, and particularly carbonic acid, which is poisonous, — the same matters, in fact, which are thrown out by the lungs. The skin, in truth, is a kind of helper of the lungs; and a lady, by covering herself with garments which have no pores, and will neither admit air nor let off insensible perspiration, may be strangled almost as certainly as by putting a cord around her neck, and closing her windpipe. Almost twice as much fluid passes off through the skin as through the lungs.

Keep the Pores Open. — It is obvious from what has now been said, that the pores of the skin should be kept open to preserve health. When bathing is neglected, and the under garments are not changed sufficiently often, the insensible perspiration accumulates and dries up upon the skin, mingling with the oily matter secreted by the oil glands, and with the shreds of the scarf skin, and forming a tenacious gluey matter, which closes up the pores. By this misfortune, that large quantity of worn-out matter which usually goes off with the fluid through the pores, is retained to poison and embarrass the living current of blood, or seek an outlet through lungs or kidneys which are already burdened with quite as much as they are able to do. How important, then, that these channels through which the body is purified, should be kept open! that the skin should be kept healthy and in working order!

The Bath, the Great Purifier. — But this can only be done by daily washing. The bath is the great purifier of the human skin.

The antiquity of bathing is very great. The practice is supposed to reach back to the infancy of the race, or certainly to a very early period. The inhabitants of middle Asia are said to have been the first to use the bath for the specific purposes of purification and health. Domestic baths are represented as having been used by Diomed and Ulysses. Andromache prepared warm water for Hector on his return from battle. Penelope banished sorrow by unguents and baths.

The Baths of the Medes, the Persians, and the Assyrians were much celebrated. Alexander, though familiar with the voluptuous baths of Greece and Macedon, was astonished at the magnificence of those of Darius.

Roman Baths. — As luxury and refinement advanced, the means of luxurious bathing were multiplied, until establishments were built by the Romans, the very remains of which excite wonder at this day. Among these are the Thermæ of Agrippa, of Nero, of Vespasian, of Titus, etc. One of the halls of the building constructed for baths by Diocletian, forms at this day the church of the Carthusians, one of the most magnificent temples in Rome.

Number and Character. — According to Pliny, baths were introduced into Rome about the time of Pompey; their first erection Dion

attributes to Mæcenas. Agrippa increased their number to one hundred and seventy; and within two hundred years they were multiplied to about eight hundred. These establishments were so vast that one writer compares them to provinces. They were paved either with crystal, or mosaic, or plaster, and were adorned by sculpture and painting to the very highest degree. They added not merely to the health and luxury of the people, but contributed to their culture in the highest departments of art and taste.

Names of Baths. — To the apartment of their dwelling in which they washed their bodies in warm or hot water, the Romans gave the name of *balneum*, or bath; to the public establishments, that of *balnea*, or baths. The apartment which held the vessels was called *vasarium*. In this were the three immense vessels which contained the cold, warm, and hot water. There were instruments of bone, ivory, and metal, for scraping the skin, with a groove in the edge, through which the impurities of the skin might run off.

On the north front of the thermæ was a reservoir of cold water large enough for swimming, called by Pliny the younger, *baptisteium*. In the centre was a spacious vestibule, and on each side, warm, cold, and vapor baths, with apartments for cooling, dressing, and refreshments. There was the *frigidaium*, a vaulted room, a cooling room midway between the warmer and the open air; the *tepidarium*, with a temperature widway between the above and the hot bath; and the *colidarium*, or the vapor bath.

Then there was the room where the body was rubbed over with a great number of ointments and essences of the most precious kinds; and another in which it was sprinkled over with powder; and also a room which held the clothes, in which the bathers undressed and dressed at pleasure.

All these apartments were double, the two wings being appropriated to the sexes.

Open to all. — These baths, thus numerous and magnificent, were open to all classes of the people, and contributed largely to the general health and physical endurance for which the Romans were conspicuous.

The Bath Neglected under the Christian System. — When Jesus of Nazareth came into the world, he found man's nature cultivated in a most defective way. The moral element had sunk down to the lowest place, while the physical had risen to the highest, — just the reverse of the true order of things. This Divine Teacher came, not to recommend a neglect of the body, but a new cure for the imperishable part. Mankind were for the first time systematically taught to forgive injuries. Prostrate liberty, and degraded woman, became the wards of Christianity.

Unfortunately, under the new order of things, the lower element of man, which had been exalted and worshipped, was cast down and abused. What the Pagan had pampered, the Christian persecuted. The body, which had been bathed, and scrubbed, and anointed, and

perfumed, was thenceforward, in consequence of the improper interpretation of certain texts, scourged, and fasted, and clothed in rags. Thousands believed, and thousands do to this day, that to torment the body is to please God. Under this feeling, the public and private baths were neglected; and to this day, no christian nation has fully appreciated the necessity of cleanliness, and of sanitary measures for the maintenance of the public health. To a considerable extent, the body is still under disabilities; still the subject of persecution; and where this is not the case, it is too often regarded only as a loose outside garment, to be thrown over the traveller to the celestial city, and is expected to be well soiled with mud and dust. The teachings of the Great Master will by and by cease to be perverted, and will be applied to raise up man's body, as they have raised his mental and moral nature, and will make a well-developed and harmonious being.

In the mean time, it is the duty and the privilege of the physician to urge a return, not to the magnificence of the ancient regimen for training the body, but to its real efficiency in a simpler form.

Cold Bathing. — Water applied to the skin at a temperature below 75° of Farenheit, is called a cold bath. If applied to a person with sufficient constitutional energy to bear it, it is a decided and very powerful tonic. By this is meant that it promotes the solidity, compactness, and strength of the body.

The first effect of the application of cold water to the skin, is the sudden contraction of all its vessels, and the retreat of the blood towards the internal organs. The nervous system, feeling the shock, causes the heart to contract with more energy, and throw the blood back with new force to the surface.

This rushing of the blood back to the skin, is called a reaction; and when it occurs with some energy, it is an evidence that the system is in a condition to be much benefited by the cold bath. When this does not take place, but the skin looks shrunken, and covered with "goose flesh," and a chilliness is felt for a longer or shorter time after bathing, then the inference should be, either that the water has been used too profusely, or that the bather has too little reactionary power for this form of the bath. The latter conclusion must not be accepted until cold water has been tried with all possible guards, — such as beginning with tepid water, and gradually lowering the temperature; bathing for a time, at least, in a warm room; beginning the practice in warm weather; and applying the water at first with a sponge, out of which most of it has been pressed by the hand. With some or all of these precautions, most persons may learn to use the cold bath. It is always to be followed by brisk rubbing with a coarse towel or flesh-brush.

The Sponge Bath. — A wet sponge is the simplest, as well as the best mode of applying water to the surface of the body. With persons who are feeble, a part only of the body should be exposed at a time, — which part, having been quickly sponged and wiped dry, should be covered, and another part exposed, and treated in a like manner. In this way, all parts of the body may successively be

subjected to the bracing influence of water and friction, with little risk, even to the most delicate, of an injurious shock. The only furniture required for carrying out this simple plan of bathing, is a sponge, a basin, and a towel. There is no form of bathing so universally applicable as this, or so generally conducive to health.

The Shower Bath requires a brief notice. The shock to the nervous system produced by it, is much greater than that from sponging. Beside the sudden application of coldness, there is a concussion of the skin by the fall of the water. This form of the bath is excellent for those who are strong and full of vitality, but is fraught with some danger for the feeble and delicate. This, however, depends on the judgment with which it is used. In the form of a delicate shower, and with tepid water, the frailest body might bear its shock.

The Warm Bath. — A temperate bath ranges from 75° to 85°; a tepid bath, from 85° to 95°; a warm bath, from 95° to 98°; a hot bath, from 98° to 105°. A warm bath is of the same temperature with the surface of the body. Of course it produces no shock. To those who are past the meridian of life, and have dry skins, and begin to be emaciated, the warm bath, for half an hour, twice a week, is eminently serviceable in retarding the advances of age.

It is a mistake to suppose the warm bath is enfeebling. It has a soothing and tranquillizing effect. It renders the pulse a little slower, and the breathing more even. If the bath be above 98°, it becomes a hot one, and the pulse is quickened.

The temperature of the warm bath, as of the cold, should be made to range up and down according to the vigor of frame, and the circulation of the individual. The aged and the infirm, whose hands and feet are habitually cold, require it to be well up towards the point of blood heat. The pulse should not be made to beat faster by it, nor should sensations of heat or fulness be induced about the temples and face.

The Vapor Bath. — This differs from the warm bath in being applied to the interior as well as to the exterior of the body. The warmth is inhaled into the air tubes at the same time that it envelops the external person. The first sensation of the vapor bath is oppression, and causes some difficulty of breathing; but this passes off as soon as the perspiration begins to flow. From the steam-chamber, the bather should step into a tepid bath, and after remaining a short time in this, wipe himself thoroughly with dry towels.

Cold Affusion immediately after either the warm or the vapor bath, is excellent. In Russia it is common, after the vapor bath, to pour upon the head of the bather, a bucket of warm water, then one of tepid, and lastly one of cold; and to finish with giving him a good towelling. It is even said that the natives leave the steam and the hot bath, and roll themselves in the snow.

No danger need be feared from cold affusion when the skin is red and excited by the warm bath, provided the nervous frame is not in a depressed condition. If the body is chilled, and the nerves pros-

trated by disease or fatigue, the application of cold water to the skin may do great mischief, and should in no case be hazarded. Cold water applied to a *hot* skin, cannot do harm; to a *cold* skin, it can do nothing but harm. Hence, the cold bath may be used with advantage on rising in the morning, while the body is warm. Another good time is at ten or eleven o'clock in the forenoon, when the nervous power is advancing towards its height for the day.

Reaction Necessary. — As a means for promoting cleanliness, the importance of the bath can hardly be overstated. For the support and improvement of health, it is equally important. But for the promotion of the latter, one prerequisite is essential, — the reaction of the skin.

Various means are resorted to, to secure this. The Hindoos secure it by a kind of shampooing, thus described by a writer: "One of the attendants on the bath extends you upon a bench, sprinkles you with warm water, and presses the whole body in an admirable manner. He cracks the joints of the fingers, and of all the extremities. He then places you upon the stomach, pinches you over the kidneys, seizes you by the shoulders, and cracks the spine by agitating all the vertebræ, strikes some powerful blows over the fleshy and muscular parts, then rubs the body with a hair-glove until he perspires, etc." "This process," says the writer, "continues for three-quarters of an hour, after which a man scarcely knows himself; he feels like a new being." Sir John Sinclair speaks thus of the luxury of the process: "If life be nothing but a brief succession of our ideas, the rapidity with which they now pass over the mind would induce one to believe that, in the few short minutes he has spent in the bath, he has lived a number of years."

The Coarse Towel, the horsehair glove, and the flesh-brush are the appliances commonly used for stimulating the skin, and causing reaction. For tender skins, the towel is sufficiently rough. With this the bather should rub himself, unless he is weak and the exertion produces palpitation. The muscular exertion necessary for this will help the reaction.

Restoration of the Bath desirable. — It is greatly to be wished that the bath might be restored to something like the importance it held among ancient nations. It is a luxury, a means of health, and a source of purity both of body and of mind; for the morals of any people will rise where the use of the bath is regular and habitual. The attempt to cure all diseases by what is called the "water-cure," has a bit of fanaticism about it, which will cure itself in time. But that water, used judiciously in the form of baths, is a potent moral and physical renovator of the race, is not to be doubted; and this should commend it to all sensible people, even though it should sometimes be abused by excess, as all good things are.

A people with clean hands, and clean bodies, and clean health, will very naturally come to like clean streets and clean cities, and finally, *clean consciences.* A fondness for cleanliness in one form, almost

necessarily runs into a like fondness for it in other forms, until the purifying desire pervades the whole nature, moral as well as physical.

Air and Ventilation.

Water and air are fluids. Water covers two-thirds the surface of the globe, having a depth, in some places, of five miles or more. Air covers not merely the remaining third of the earth, but the water as well. It embraces the entire globe, pressing alike upon land and water, and having a depth of about *forty-five miles*. This is a sea of such magnitude, that the Atlantic or Pacific shrinks to a very small lake in the comparison.

Man has his residence, and walks about at the bottom of this ocean. He has no means of navigating it, and, therefore, never rises to its surface; but, with his natural eyes, and with telescopes, he discovers objects which lie millions and billions of miles beyond it, and even acquires much exact and useful information respecting them.

This vast ocean of air we call an *atmosphere*, from two Greek words signifying vapor, and a sphere, — it being an immense fluid-sphere, or globe.

Pressure of the Atmosphere. — This atmosphere presses upon man and upon every object on the surface of the earth, with a force equal to fifteen pounds to every square inch; and as a man of average size has a surface of about 2500 square inches, the air in which he lives, presses upon him with a weight of eighteen tons. This would of course crush every bone in his body, but for the fluids within him which establish an equilibrium, and leave him unoppressed.

The Philosophy of Breathing cannot be fully explained in the brief space allotted to this subject; it is enough to say, that, upon the attempt being made to draw in the breath, the muscles of the breast draw up the ribs, the diaphragm or midriff at the same time contracting, — the whole movement being such as to create a *vacuum* in the lungs. The air, pressing upon every part of the surface, as mentioned above, instantly rushes in and fills the vacuum. The lungs being filled, the contraction of the muscles of the belly causes the diaphragm, which has sunk down towards a plane, to rise up into the form of an umbrella, and squeeze the air out of the lungs.

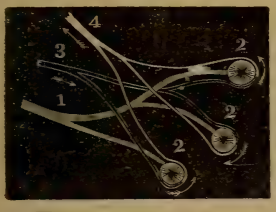
This is about all that need to be said of the method of getting the air into and out of the lungs. The whole process is under the control of that part of the nervous system called the *medulla oblongata*, or top of the spinal cord.

Objects of Breathing. — There are at least three objects to be accomplished by breathing; the renewal of the blood and the taking of impurities out of it; the warming of the body; and the finishing up of the process of digestion, and the change of chyle into nutritive blood.

There is no good reason for attempting here to explain the last of these objects. To give any idea of the first two, it is necessary to furnish a very brief explanation of the circulation of the blood.

The heart is double. There are in fact two hearts, a right and a left, joined together. The right heart receives the blood from the veins, and forces it up into the lungs, whence it is brought back to the left heart, and by this is driven through the arteries into every part of the body. When received into the lungs, the blood is of a dark purple color, and is loaded with carbonic acid and some other impurities. It has also been deprived, during its circulation through the body, of most of its oxygen. The small, delicate vessels which convey this dark and impure blood through the lungs, pass directly over the air cells; and at this moment the carbonic acid and water pass through the blood vessels and air cells, and are borne from the body on the outgoing breath; while the oxygen enters the blood through the walls of the same vessels; and this exchange, which takes place with every breath, alters the blood from a dark purple to a scarlet red. Figure 71 shows at 1, a bronchial tube divided into three branches; 2, 2, 2, are air-cells; 3, branches of the pulmonary artery winding around the air-cells with the dark blood to be reddened.

Fig. 71.



That carbonic acid and water are borne out of the lungs with every breath, may be easily proved. If we breathe into lime-water, it will become white. This is owing to the carbonic acid in the breath uniting with the lime, and producing carbonate of lime. Then, if we breathe upon a piece of glass, it becomes wet, showing that there is watery vapor in the breath. That the blood receives oxygen from the air we breathe is proved by the fact that the ingoing breath has one-fourth more oxygen in it than the outgoing.

The lungs, then, take out of all the air we breathe, one-fourth of its oxygen. If we breathe it over a second, a third, and a fourth time, it not only has less oxygen each time, and is less useful for the purposes of respiration, but it becomes positively more hurtful by reason of the poisonous carbonic acid which, at every outgoing breath, it carries with it from the lungs.

Effect of Sleeping in a Small Room. — Now, consider the effect of sleeping in a small room, seven feet by nine, not furnished with the means of ventilation. A pair of lungs, of ordinary size, take in, at each breath, about a pint of air. Out of this air one-fourth of its oxygen is extracted; and when it is returned from the lungs, there comes along with it about eight or nine per cent. of carbonic acid. As it is not safe to breathe air containing more than three or four per cent. of this gas, the pint which the lungs take in and throw out at each breath, is not only spoiled, but it spoils something more than another pint with which it mingles; and as the breath is drawn in and thrown out about eighteen times per minute, not less than four cubic feet of air is spoiled in that time by one pair of lungs. This is two hundred and forty feet an hour; and in eight hours, the usual time spent in the sleeping room, it amounts to one thousand nine hundred and twenty cubic feet. During the hours of sleep, therefore, one pair of

lungs so *spoil* one thousand nine hundred and twenty cubic feet of air that it is positively dangerous to breathe it.

In a room seven feet by ten, and eight feet high, there are five hundred and sixty cubic feet of air, a little more than one-quarter the amount spoiled by one pair of lungs during sleeping hours. In a room of this size, there is not air enough to last one person three hours; and yet two persons often remain in such rooms eight or nine hours.

Why then do they not perish? Simply because no room is entirely air tight. Fortunately, all our rooms are so made that some foul air will get out, and a little that is pure will find its way in. *Were it not so, no man who closed the door behind him, for the night, in a small bedroom, would ever see a return of day.*

Suppose fifty children are confined in an unventilated school-room, twenty feet by thirty, and ten feet high. These children will spoil about one hundred and fifty feet of air in one minute, or nine thousand feet per hour, or *twenty-seven thousand feet in three hours*, — a usual half day's session. But the room holds only *six thousand cubic feet of air, — the whole of which these children would spoil in forty minutes.*

These simple facts show the absolute necessity of ventilation. Yet how poorly it is provided for in our sleeping rooms, our sitting rooms, our school houses, our churches, our court houses, our halls of legislation, and even in our anatomical and medical-lecture rooms!

In sick-rooms, ventilation should receive special attention. — Every disease is aggravated by the breathing of bad air. Yet it is common to close all the doors and windows of rooms where sick persons are confined, lest the patients should take cold. This is a bad practice. The sick should have a plenty of fresh air. Their comfort is promoted by it, and their recovery hastened.

It is strange that human beings should be afraid of pure air. It is their friend and not their enemy. Impure air only should be shunned.

The supply of good air ample. — There is no necessity for breathing air which has lost a part of its oxygen, and acquired a portion of carbonic acid. The supply of good air is ample. An ocean of it forty-five miles deep, covering the whole globe, seems a pretty plain intimation that it is not to be sparingly used. When men retire within their dwellings, and attempt to shut out this great sea of air, they show about as much wisdom as would be exhibited by fishes which should build water-tight huts around themselves at the bottom of the ocean, and swim about continually in the unchanged water within. Fishes can only live in glass globes when the water is changed every day; and if the water be changed half a dozen times a day, they cannot be as healthy as when swimming in the great ocean.

Cultivating Trees. — In most of our cities there is almost a criminal neglect of the cultivation of trees; yet they add greatly to the health, and prolong the lives of the citizens.

The leaves of a tree are the lungs with which it breathes; but in-

stead of extracting oxygen from the air, and giving back carbonic acid, like man, it takes only the poisonous carbonic acid, and gives back oxygen.

Were there no animals on the globe, the vegetables would consume all the carbonic acid, and die for want of breathing material; on the other hand, were there no trees or other vegetables, the animals would in time so far exhaust the oxygen as to perish for lack of it. The two together keep the air healthy for each.

The relation of plants and animals, in all that relates to their peculiar actions and effects, is a complete antagonism. Their movements are in contrary directions, and by hostile forces. Their opposing actions may be illustrated thus:

THE VEGETABLE PRODUCES the non-nitrogenized substances, sugar, starch, and gum.	THE ANIMAL CONSUMES the non-nitrogenized substances, sugar, starch, and gum.
THE VEGETABLE DECOMPOSES carbonic acid, water, and ammoniacal salts.	THE ANIMAL PRODUCES carbonic acid, water, and ammoniacal salts.
THE VEGETABLE DISENGAGES oxygen.	THE ANIMAL ABSORBS oxygen.
THE VEGETABLE ABSORBS heat and electricity.	THE ANIMAL PRODUCES HEAT and electricity.
THE VEGETABLE IS A DE-OXIDIZER.	THE ANIMAL IS AN OXIDIZER.
THE VEGETABLE IS STATIONARY.	THE ANIMAL IS LOCOMOTIVE.

We learn from the facts of Geology that the time was in the history of our globe, when lunged animals could not breathe its atmosphere; it was too much loaded with carbonic acid. The trees then grew with a rapidity almost inconceivable, decomposing the poisonous gas, taking to themselves the carbon and setting the oxygen free, and lifting up their brawny arms to heaven in acts of thankfulness for the great feast.

At length the noxious gas was exhausted; and then, pale and sickly, they feebly held up their hands for help; and God sent numberless tribes of warm-blooded animals, full of life and energy, that sported in the exhilarating air, and destroyed vast forests, thereby reproducing carbonic acid.

These simple facts should teach man the sanitary importance of trees and bushes; and wherever he has a rod, I had almost said a foot of ground to spare, a tree should be planted and carefully nursed. This is particularly necessary in large cities. Every narrow street even in Boston, should be lined with trees. For their absence, thousands of men, women, and children have died sooner than they otherwise would. We want them stretching up their arms to all our windows to give us oxygen, and to take to themselves the carbonic acid we exhale.

Tight Dresses. — The health may be injured by not breathing air enough, as well as by inhaling that which is impure. It is therefore improper to compress the lungs by wearing tight dresses. If the ribs are held down by the dress, but little air can get into the lungs, and only a small amount of carbonic acid can be carried out. In this event, the health is injured in two ways; the blood is not vitalized by oxygen received, and it is poisoned by carbonic acid retained.

Tight lacing has in a measure gone out of fashion; yet too much of it for the best development of female health is yet retained. As a knowledge of physiology and the laws of life, and a better judgment of the true symmetry of the female form prevail, this barbarous custom will pass out of use, and the substantial health, and real beauty of the American woman will together rise to a higher standard.

Fill the lungs well. — Persons who take but little exercise are apt to acquire the habit of drawing the air very little into the lower part of the lungs. This should be counteracted by taking long and full inspirations for a short time, every day, while in the open air. This practice would get the lungs in the habit of opening to the air quite down to their base, and would make the breathing much more natural as well as effectual at all times. In the case of young persons, it would enlarge the capacity of the chest, and add to the brief years of life. Parents should see to it that their children spend from ten to twenty-five minutes every morning inflating their lungs with pure air.

Travelling.

It is true that many persons who dwell in one spot, and hardly move from it all their lives, live to old age. Yet change of location for a short time, or permanently, does promote health, and protract life. The mind tires of contemplating one set of objects for a great length of time; and in the absence of all stimulation, it sinks into apathy, and imparts no energy to the body. The physical frame, partaking of the ennui of the mind, droops. This is doubly true when one is suffering from illness.

Travelling is eminently fitted to draw the thoughts of the nervous and feeble from themselves, and to turn them with interest to outward objects. This is of great importance. It is better than stimulants and tonics.

The nervous system has great power over the health; and the pleasurable sensations, excited by visiting new places and scenes, and conveyed to the mind through the nerves, often awaken in the constitution, energies which are essential to recovery.

Travelling places a man in entirely new circumstances. It surrounds him with novelties, every one of which makes a demand upon his attention. It breaks up his old trains of thought, which have been monotonous so long that they have grown oppressive. It causes the world to touch him at a thousand new points, and surprises him every day, perhaps every hour, with a view of the false relations he has sustained to it. It opens to him new depths in his own nature, and causes him to wonder that they never attracted his attention before. It opens to him one door after another, leading him into new apartments of knowledge; and as the world grows, he finds himself growing with it, until his whole nature dilates and beats with new life.

Means of Travelling Increased. — The last twenty-five years have greatly increased the facilities for travelling. Many of the sick may now seek health in distant lands, who, had their circumstances been

similar twenty years ago, would have been compelled to pine at home. The cars give an easy journey to thousands who could not have borne a ride in the old stage coach.

One thing more wanted. — But one thing is wanted to bring the means of travelling, for the sick, very nearly to perfection; it is a method of propelling carriages upon common roads, by some cheap power, which can never be exhausted, and which shall be easily managed by the traveller or his companion. This is a prominent want of the present hour; a giant discovery, which, at a single stride, would carry the world forward a hundred years, and which, we may hope, is in the womb of the near future. The power, it is believed, will be *electro-magnetism.* The mode of applying it, when discovered, will be simple, yet wonderful; and the results to the sick, beneficent beyond expression. The human mind cannot conceive the advantages which invalids would derive from such a mode of conveyance. Journeys might be long or short; might be made with any rate of speed which the strength permitted. The morning or afternoon stages might be discontinued when fatigue demanded, and resumed at pleasure. Over uninviting regions the traveller might glide swiftly, and linger where nature spreads her feasts for the mind.

The best Seasons for Travelling are spring and autumn. Winter is too cold. A pleasurable excursion may sometimes be made in summer; but in general the season is too hot for comfort. In changing climate, food, water, etc., in the sultry season, there is danger of contracting very troublesome bowel complaints.

Means of Travelling for the Poor. — There is one painful thought connected with travelling as a means of health. It cannot be enjoyed by the poor. When sick they generally have the careful attention of humane physicians; they receive from kind neighbors little delicacies of food and drink; they are watched with by night, and visited by day; but though suffering from the hard routine of a laborious life, and needing diversion and recreation more than all else, they cannot travel. They have not the means, and nobody thinks of supplying them for such a purpose.

This is a channel into which charity ought to pour some of its benevolent streams. In large cities there is a class of poor females, who sit in their small rooms and ply the needle diligently through the whole year, and who run down every summer very near to confinement in bed. Two or three weeks, in the hot season, spent in travelling in the mountains and elsewhere, would bring back the color to the pale cheeks of such persons, and save them many years both from the grave and from the almshouse. No millionnaire could make a better use of his property than to set it apart, at his death, for the specific purpose of enabling the poor to travel. And if this suggestion should induce one rich man to consecrate his wealth to the God-like work of bestowing health, happiness, and intelligence upon the poor, the great labor of preparing this book will not have been endured in vain.

Amusements.

That which engages the mind, and at the same time impresses it with pleasurable sensations, is a sufficiently accurate definition of amusement. Whatever occupies the thoughts and senses in an agreeable way, and employs them with some degree of intensity, comes under the same head.

This broad and general definition allows us to regard our daily employments as amusements when they engage our deep attention, and at the same time give us pleasure.

The term amusements, however, in the more popular sense, is restricted to those sports, games, plays, exhibitions, entertainments, etc., which involve a *suspension* of our daily labors, and are properly called *diversions.*

When nature is tired and worn with those severe and exhausting toils by which we earn our bread, amusements turn us aside, *divert* us, engage other powers, and allow our tired faculties to rest. They are, therefore, of very great importance. Even the most trifling amusements may have the highest value. Their very nature and object imply that they will be valuable just in proportion as they divert and rest us. And just in proportion as they do these things, they give us health.

One other thing amusements do for us, which must not be forgotten; they preserve in us, in middle life, and even in old age, the warm simplicity of childhood. They keep us young in our dispositions and feelings. They keep us in harmony with nature, and consequently artless and truthful. They prevent the formalities of conventional life from stiffening us into cold and repulsive hypocrites.

Selection of Amusements. — Of course the same amusements are not adapted to all persons. The farmer who has worked his muscles all day, would not be benefited by a game of ball in the evening; yet there are few games more suitable for the student who has bent for many hours over his books. Care should always be taken, therefore, that amusements or sports do not bear upon those limbs or faculties which are wearied by work.

Amusements improve various faculties. — To one who has a taste for art; who is fond of works of genius and poetry, theatrical entertainments will always be agreeable, and a source of gratification and health. I know these exhibitions are objected to by many as immoral and hurtful, but more, I think, from habit and fashion, than upon any solid grounds of reason or religion. They certainly appeal to a high order of faculties in the human mind; and to those who are fitted to receive them, teach lessons of great moment. Even the lower exhibitions of comedy, though not particularly improving to the mind, are yet, from their power to provoke *laughter*, among the most powerful up-builders of health.

The Games of Whist, Euchre, etc., engage the minds of the players in a sort of mental contest, which is exciting, agreeable, and health-

imparting. These games make us skilful in calculating chances, and judging how men ought to act under certain contingencies. They make us sharp to detect and turn aside the unseen forces, which tend to oppose and destroy our success in life.

I hardly need say that money or other property should never be staked upon a game of cards, or upon any other game. Gambling is one of the meanest as well as most destructive things in which men can engage. It raises the healthful excitement of these innocent amusements, — innocent when properly pursued, — into raging passions, which, when defeat comes, as come it will, sink into remorse and bitterness as terrible as the mind can conceive. I warn young men as they would escape the pangs of a hell on earth, and the loss of character, happiness, and probably health for life, to avoid any such abuse of cards.

Chess, Chequers, etc., appeal likewise to the fondness of competition, which is common to all men. But they cultivate in us a little more of the mathematical element. As they require very close application of the mind, they are not suitable for persons of sedentary employments, or whose daily avocations require a constant use of the mind. Such persons should choose lighter and more active amusements.

Lighter Amusements. — Beside these higher amusements, there are a great number of lighter and more childish ones, which should not be overlooked.

Some of these are merely physical, involving a trial of strength, fleetness, action, etc., as the games of ball, cricket, etc. Others are domestic in their nature, involving mirth, and various other of the lighter excitements, as blind-man's buff, puss in the corner, hole in the wall, fox and geese, hunt the slipper, hurly-burly, roll the platter, etc.

In fashionable American households, these simple domestic plays have in a great measure, gone out of use, — being deemed vulgar, and below the dignity of ladies and gentlemen. I am sorry to say this; for the vulgarity, in my judgment, is in those who reject them, and not in the plays.

The officer of our navy, whose visit to the mansion of Lord Hardwick I have spoken of on page 90, reports that on the evening of one of his visits, the play of blind-man's buff was engaged in by the whole party; and that his Lordship in attempting to make a short turn during the play, fell upon his back, when one of his daughters, who was blinded, caught him by the heels, and being assisted by others, drew him stern-foremost half the length of the hall, amid the shouts of the whole party. This would have been deemed very vulgar by fashionable people in this country. But to me, who am no believer in any nobility which Lord Hardwick can receive from kings or queens, this simple narrative raised him at once to a peerage in nature's realm. Without doubt, he is one of nature's noblemen. A man in his station, and with his wealth and temptations to snobbery, who can preserve such simplicity of character, must have a warm as well as a noble heart in his breast.

Value of Domestic Amusements. — I remark here, that in all our amusements, we should as far as possible, seek those of a domestic character. They are more simple and childlike in their nature, and preserve in us, even to old age, the freshness of feeling, and truthful simplicity, which spread so beautiful a greenness over the autumn of life.

Simple domestic amusements, too, are always gotten up on a cheap scale; they do not encourage costly extravagance, and can be indulged in by the poor as well as the rich.

But more, and better than all, they keep young men and old men, and young women and old women, at home, by making the domestic circle the centre of attraction. They draw the seekers of pleasure around the hearth-stone, instead of outward into the world. They incline young and old to look to the *family circle* as the centre of the most pure, because the most simple and natural, enjoyments. They teach us to look to *home* as the centre of life, and to all outside as only its appendages.

It has been said that *homes* are found only in England; that in other countries, life wanders, houseless and shelterless, abroad, seeking happiness, it knows not where, while in England it nestles warmly in the bosom of home. To whatever extent this is true, — and I believe there is truth in it, — it is owing to the simple household amusements of England.

An American Want. — One of the great wants of this country is a more liberal provision for amusements. We attach here too much value to wealth; and we pursue it with an intensity altogether incompatible with health. We cannot take time for recreation because we are in so great a hurry to be rich.

If we would save ourselves from a total wreck of health, we must take broader and better views of life. We must value it for its solid comforts, rather than for its glitter and show.

We need quite an increase in the number of our holidays, — days on which the people can give themselves up to sportive recreations. Some progress has been made in this direction of late. Washington's birth day has very nearly fixed itself among us as a holiday; the claim of Lafayette's to a similar observance is beginning to be acknowledged. Quite a number more, scattered through the year, are much wanted. They would save hundreds of our population annually from insanity.

Contrary to the general belief, insanity is very prevalent among seamen and farmers. The former lead a life of dreary solitude upon the ocean; the latter, one, if not of equal, certainly of very objectionable solitude upon the land. The sailor who does business upon the great sea, should provide himself with great numbers of games to amuse him in his wanderings. The farmers of our land should cultivate more of the sociabilities of life. Let them meet together in the fine summer evenings, like the peasants of France, and dance gayly upon the green lawns before their cottages. They will till their lands more cheerfully for it; enjoy better spirits and health; and live to greater age.

Completeness of Life. — Amusements are necessary in order to give a completeness to life. The faculties of the human mind are numerous. It is only when they are all exercised, in their due proportion, that there is a harmonious beauty in our lives. The customs of society twist us all out of shape, — perverting us mentally, morally, and physically, and robbing us of every manly and healthful quality. Getting out of the ruts of fashionable life, we must come back to the simple paths of nature.

I would strongly impress upon parents, teachers, and guardians the importance of studying well the various temperaments, physical and mental peculiarities of their children, in order to judge wisely of the kind and amount of recreation required by them.

Instance: a pale, delicate child of ten to twelve or fourteen years, with clear complexion, flaxen hair, blue eyes, slender frame, and a nervous, sensitive orginization, with strong mental cast, requires much more recreation and out-of-door exercise than a full-blooded, robust child of that age; a fact not at present duly considered, as a general thing.

TEMPERAMENTS, CONSTITUTION, AND SYMPTOMS.

MAN has *thinking*, *warming*, *nourishing*, and *moving* powers. For the performance of each of these great functions, he has organs of the best possible construction.

For Thinking, he has a *brain.* If this be *large in proportion to his other organs*, it gives a character, a cast, a peculiarity to his whole organization. Everything about him is subordinate to his brain. We recognize him, at once, as a thinking and a feeling being. He has an intellectual *look.* There is a delicacy, a refinement, a sensitiveness, a studious habit, an air of thoughtfulness about him, which determine his traits, his tone, his temper, his whole character. Hence it is proper to say he has a *cephalic* or *thinking temperament.*

The Lungs and Heart, devoted to renewing and circulating the blood, are placed in the *chest* or *thorax.* If *these be large in man in proportion to other organs*, he is characterized by great activity of circulation, by a large supply of red blood, and by the general indications of a full, warm, and bounding life. This activity gives him his tone and temper, and shows that his is the *thoracic* or *calorific temperament.*

In the Great Cavity of the Abdomen is done the work of receiving, digesting, and disposing of the materials which nourish the body. If the organs which do this work *be large in proportion to others*, the body is fed to repletion, and the whole organization speaks of the table. The habit, the look, the temper, are all sluggish. This is the *abdominal* or *alimentary temperament.*

The Bones and Muscles are instruments by which the *movements* of the body are performed. If these be the largest, in proportion, of any in the body, then the locomotive powers are in higher perfection than any others. There is largeness of person, energy of movement, and greatness of endurance. The whole cast of the person partakes of the strength and coarseness of bone and muscle. This is the *muscular* or *locomotive temperament.*

This gives us four temperaments, as follows:

I. **The Cephalic Temperament,** denoted by large brain, activity of mind, and general delicacy of organization.

II. **The Thoracic Temperament,** indicated by a large chest, force of circulation, redness of skin, great activity, warmth of temper, and fulness of life.

III. **The Abdominal Temperament,** denoted by a large development of the stomach, liver, bowels, and lymphatics; by a fulness of belly, fondness of high living, and a disposition to float sluggishly upon the current of the world, rather than to struggle against it.

IV. **The Muscular Temperament,** indicated by largeness of frame and limbs, coarseness of structure, and great power of locomotion and endurance.

There are some reasons for reckoning but three temperaments instead of four, by reducing the thoracic and abdominal to one, after the manner of the phrenological Fowlers, — especially as the organs in the chest, and their appendages, take an important part in the process of nutrition. But as the heart and lungs are placed in one cavity, and the stomach, liver, etc., in another; and as one set of these organs may be largely developed, and the other defectively, I have thought it most convenient, on the whole, and quite as philosophical, to retain the *four* temperaments.

These temperaments seldom or never appear single and pure. They mix and cross with each other in all possible ways.

Medication and Temperaments.

The object of speaking of temperaments in this work, is to make the reader acquainted with the principles upon which remedies are to be adapted to their development. The philosophical-minded physician will, in prescribing, always keep the temperament in view.

Persons of a Cephalic Temperament cannot bear powerful medicines, — particularly drastic purges. Their fine, delicate and sensitive organizations would be torn all to pieces by doses which would hardly be sufficient in a fully-developed muscular temperament. This should always be borne in mind in prescribing for persons of a large brain and delicate organization.

In this temperament, too, fevers, instead of running a high and fiery course, take the low typhoid type, the patient becoming pale, and showing a constant tendency to sink. Such patients would be killed by purging, leeching, cupping, sweating, and starving. They want tonics, stimulants, and every kind of support which the case will possibly permit.

Persons of a Thoracic Temperament, having a rapid circulation, and a fulness of blood, are most liable to inflammatory diseases. When fever attacks them, they have what is called a "high fever." If rheumatism comes, it is *acute* rheumatism. Disease takes hold of them *smartly.* As they do everything with emphasis and energy when well, so, when ill, they make a business of it, and are sick with all their might.

Stimulants and tonics generally make such persons worse. They want sedatives, and diaphoretics, and sweats, and purgatives, and leeches, and cups, and low diet, and cold bathing, and whatever else will slacken the ferocious swiftness of their circulation.

Those of the Abdominal Temperament are not particularly subject either to very high fevers, or to those typhoid forms which produce sinking. As in the two temperaments noticed above, their complaints chiefly attack the organs most largely developed. Their diseases affect the stomach, the liver, the spleen, and the bowels. These are the largest organs in their bodies, and are most used; and, being overworked, they fall into disease.

As these persons are slothful in all their habits, so their diseases run a sluggish course. They are not so liable to sudden death as persons of either of the preceding temperaments. They have all sorts of *chronic* diseases which linger a great while, and are cured with much difficulty.

These persons will bear larger doses of medicine than either of the preceding. Neither do their constitutions respond as readily to medicine. A physician will be disappointed if he expects to see them recovering as fast under its use.

Those of a Muscular Temperament, having little fondness for anything but a hardy, active life, are much exposed to the elements. Though strong and long-enduring, the hardship of their lives often breaks them down, and when felled by disease, they are oftentimes shockingly racked and torn by it.

These persons bear large doses of medicine, and when sick, need to be treated with an energy proportioned to the strength of their constitution. Rheumatism, which affects the joints, the ligaments, and the tendons, is an affection from which they suffer severely.

The Constitution.

In prescribing for disease, it is of very great importance to take notice of the constitution. This is a different matter from the temperaments. Persons of the same temperament are often quite unlike in the strength of their constitution. And those having good natural constitutions, frequently abuse them by improper habits and indulgences, and at length come to have broken and very feeble constitutions.

Some persons' muscles and other tissues are put together as if they were intended never to come apart. Like some of the woods of the forest, — the lignum vitæ for example, — they are fine-grained and tough. A real smart boy will wear out an iron rocking-horse sooner than one of these persons can exhaust their constitution by hard work. Others, to outward appearance equally well made, have very little endurance, break down easily under hard work, and lose their flesh from trifling causes.

The state of the constitution, therefore, should always be learned before much medicine is given; for what a person of a strong consti-

tution will *need*, may greatly injure a feeble person, even of the same temperament.

Habits. — These must likewise be attended to. Persons using stimulants require larger doses of medicine to affect them than other persons.

Climate. — Medicines act differently on the same persons in summer and winter. Narcotics act more powerfully in hot weather and climates than in cold, and must be given in smaller doses.

Idiosyncrasy. — Medicines of only ordinary activity, act very powerfully, and even violently on some persons. This is owing to a peculiarity of stomach, or constitution, called *idiosyncrasy*. It makes the person, in this particular, an *exception to the general rule*. And no physician can know beforehand in what particulars this exceptional disposition will show itself. Persons, however, learn their own idiosyncrasies, and should make them known to those who prescribe for them for the first time.

The Sex. — The peculiarities of each sex should never be forgotten in prescribing for the sick.

Males are not so sensitive as females. They will bear more medicine, and their nervous system is not so readily excited by it.

Influence of Age. — Human life is divided into *infancy*, *childhood*, *youth*, *manhood*, and *old age*. Each of these periods has peculiarities which modify disease.

The First Period, extending from birth to the age of seven years, is marked by tenderness and excitability, and is alive to every irritation. Teething and other disturbances occur at this period, and need careful management.

The Second Period extends from seven to fourteen, and is quite subject to disease, including the second dentition. During these two periods, there is no great difference between the sexes; both are tender, and need careful watching.

During the Third Period, the changes occur which mark and separate the sexes. This is a developing period, when the functions become established, and the frame acquires form, proportion, and strength.

At this time, hereditary tendencies to disease, latent till now, begin to show themselves, and call for every possible endeavor to break them up, and fortify the constitution.

The Fourth Period embraces the vigorous maturity of life, when the powers of body and mind, in both sexes, are at the summit of their excellence. The functions are now well established. It is during this period that the female is subject to most of the harassing ailments peculiar to her sex. So numerous are these complaints, and so large and valued the class of persons affected by them, that he who treats them with the greatest skill, and with the delicacy which their nature demands, may be said to be at the head of his profession.

The Fifth Period is that of old age, when the functions are declining, and the frame is bending under the weight of years. Old age begins earlier with females than with males. Many ailments are common to this period, which require peculiar management, both medicinal and hygienic.

Proper Frequency of Dose. — Each succeeding dose should be given before the effect of the preceding is gone. If this rule is not attended to, the cure does not advance. What is gained by each dose is lost by the rallying of the disease in the interval. Care must be taken, however, not to apply this rule too strictly with very active medicines.

How to Examine a Patient.

When a patient is presented for examination, having observed the temperament, constitution, sex, and age,

1. Learn the causes of the disease, whether local, specific, or general, and also its history.

2. Search out its nature and character, whether febrile or otherwise.

3. Take notice of the whole train of symptoms, — embracing the pulse, the condition of the mouth, tongue, and digestive organs, the breathing, the urine, the fecal discharges, the condition of the brain and nervous system, the state of the skin, etc.

Brief Table Explanatory of Symptoms.

GENERAL APPEARANCE OF PATIENT.

1. Tonic spasm of the trunk.	1. Locked jaws.
2. Distorted features, altered position, and impaired motion of limbs.	2. Paralysis of one side.
3. Irregular and perpetual motion.	3. St. Vitus's dance.
4. Entire and absolute immobility.	4. Catalepsy.
5. Great and unnatural boldness.	5. Insanity or delirium.
6. Great and unusual languor.	6. The beginning of an acute disease, or the progress of a chronic one.
7. Ability to lie only upon the back.	7. Apoplexy. Organic disease of the brain or spinal marrow. Acute inflammation of the lining of the abdomen. Rheumatism of the joints.
8. Lying upon the face.	8. Several kinds of cholics.
9. Lying upon one side.	9. Pleurisy, or inflammation of the lungs. When one lung only is affected in consumption, the patient generally lies on the diseased side.
10. Maintaining the sitting posture only.	10. Disease of the heart or lungs, which interferes with breathing.
11. The head thrown back.	11. Severe diseases of the larynx and windpipe.
12. Restlessness and tossings.	12. The beginning of acute inflammation. Fevers. Delirium, and acute mania.
13. General enlargement of body.	13. Cell-dropsy. Emphysema from a wound of the chest.

Head, Face, and Neck.

1. Head bent to one side.	1. Convulsions. Paralysis of one-half the body. Dislocation of bones of neck. Swelling of glands of neck.
2. Head increased in size.	2. Chronic hydropholus. Enlarged brain.
3. Swollen scalp.	3. Erysipelas. Small pox.
4. Dull expression of face.	4. Typhoid fever.
5. Full, red face, with blood vessels of eyes injected.	5. Swelling of heart. Congestion of brain.
6. Pinched, contracted countenance.	6. Acute inflammation of peritoneum. Exposure to severe cold.
7. Pinched nose, sunken eyes, hollow temples, skin of forehead tense and dry, complexion livid.	7. Chronic disease just before death.
8. Wrinkles across the forehead.	8. Excessive pain arising externally.
9. Wrinkles from forehead, vertically, to root of nose.	9. Distress, anxiety, and severe internal pain.
10. A white line from inner angle of the eye to just below the cheek bone.	10. In children, a brain or nervous affection; in adults, abuse of the generative organs.
11. White line from the upper border of the wing of the nose (ala nasi), curved to the outer margin of the orb of the eye.	11. In consumption and wasting of flesh. The lower part of the line indicates disease of stomach; the upper part, some affection of upper part of bowel. When united with the white line named above, and with a drawing in of the cheek, fixed eyes, and a wan complexion, it implies worms.
12. The white line in children from angle of mouth to lower part of face.	12. An affection of the chest, with difficulty of breathing.
13. A white line external to the last two, in a semicircular direction towards the chin.	13. Chronic and obstinate disease in the chest or belly.
14. Swelling of face and eyelids.	14. Albumen in the urine.
15. Transient redness or flushing of face.	15. Suffering from the monthly irregularity.
16. Hectic flush.	16. Consumption. Chronic affections.
17. Paleness of face.	17. Cold stage of fever. Acute inflammation. Chronic diseases, especially Bright's disease, during recovery.
18. Dingy, white, or greenish face.	18. A low and deficient state of blood.
19. Yellow tint.	19. Jaundice.
20. A citron tint.	20. Cancerous disease.
21. A bluish tint.	21. Poor circulation in the veins. Cholera. Typhus fever. Blue disease.
22. Perpetual motion of eyelids.	22. Mania and idiocy.
23. Forcible closure of eyelids.	23. Intolerance or dread of light.
24. Eyelids remaining open.	24. Orbicularis palpebrarum. Paralysis of the muscle which closes the eye.
25. Balsy of the upper lid.	25. Injury of the third pair of nerves.
26. Flowing of tears over the cheek.	26. Obstruction of the lachrymal duct.
27. Nostrils dilating forcibly and rapidly.	27. Difficulty of breathing.
28. Itching of nostrils in children	28. Worms in the bowels.

The Tongue.

1. Surface of tongue covered with a layer of whitish, soft, mucous substance, which may partially be taken off with a scraper, — also, clammy mouth.	1. Derangement of stomach, or bowels, or both.

2. State of tongue as above, with clammy mouth, bitter taste, and fetid breath.	2. Acute dyspepsia. Asthma.
3. Great load on tongue as above, which *peels off*, leaving the tongue smooth, red, and tender.	3. Severe cases of acute dyspepsia.
4. Tongue slightly white from small white points, and sometimes covered with fur, like the fibres of coarse velvet.	4. Chronic dyspepsia. Some affection of the liver, if the fur be yellow.
5. Tongue pale, tumid, clean, and very smooth.	5. Chlorosis or green sickness.
6. Tongue *furred* and *dry*.	6. Violent local inflammation. Irritation in bowels.
7. Tongue white and loaded, with much thirst.	7. Inflammatory fever.
8. As above at first, — afterwards clean, red, and dry.	8. Protracted inflammatory fever.
9. Tongue white and loaded, with dryness.	9. Mild typhus fever.
10. Tongue dry, parched, tender, and dark brown or black. Pushed out with great difficulty and trembling.	10. Severer forms of typhus fever.
11. Tongue loaded with white, through which numerous elongated, very red papillæ protrude their points.	11. Scarlet fever.

The Throat.

1. Throat enlarged.	1. The approach of puberty in females.
2. Violent pulsation of carotid arteries.	2. Acute mania. Inflammation of brain. Enlargement of heart, and dilation of right ventricle. Anemia.
3. Pulsation of the nameless artery (arteria innominata) above the breast bone, and to the right of the windpipe.	3. Regurgitation from aorta.
4. Circumscribed swelling about throat.	4. Enlargement of glands.

The Chest.

1. General enlargement of one side of chest.	1. Large effusion of water from pleurisy.
2. Bulging at the base of a lung.	2. Water from pleurisy settling to the bottom.
3. Bulging at front upper part of chest.	3. Emphysema.
4. Bulging right hypochondrium (See Fig. 95).	4. Enlargement of liver.
5. Bulging in region of heart.	5. Water in heart-case. Enlargement of heart.
6. Tumor where the third rib joins the breast bone.	6. Aneurism of the ascending aorta.
7. Tumor between the base of the shoulder blade and the spine.	7. Aneurism of the descending aorta.
8. Depression or retraction of one side of chest.	8. Consumption. Absorption of fluid, effused by pleurisy.
9. Breathing increased in rapidity. Generally, in health, about twenty breaths are taken in a minute.	9. Spasmodic asthma.
10. Breathing diminished in rapidity.	10. Pleurisy. Paralysis of respiratory muscles. Inflammation of lungs. Emphysema. Pneumothorax. Consumption.

11. Jerking respiration.	11. Spasmodic asthma. Obstruction in larynx and windpipe.
12. Breathing with muscles of ribs only.	12. Abdominal inflammation. Inflammation of diaphragm.

The Belly.

1. Increased size of belly.	1. Dropsy. Wind in bowels. Inflammation of peritoneum. Obstruction in bowels. Hysteria.
2. Enlargement in epigastrium. Fig. 93.	2. Hysteria. Cancer of stomach.
3. Enlargement in hypogastrium. Fig. 95.	3. Distension of bladder. Ovarian tumors. Accumulation of feces in bowels.
4. Belly diminished in size.	4. Chronic dysentery. Lead colic. Also in most chronic diseases.

Private Organs.

1. Enlarged penis in children.	1. Stone in bladder. Masturbation.
2. Drawing up of testicles.	2. Stone in kidneys.
3. Enlargement of scrotum.	3. Hydrocele. Hematocele. Sarcocele.

The Limbs.

1. The limbs immovable.	1. Paralysis.
2. Limbs contracted and rigid.	2. Softening of the brain.
3. General swelling of limbs.	3. Defective circulation of blood.
4. Swelling of joints.	4. Rheumatism. Water in the joints. White swelling.
5. Limbs diminished in size.	5. Paralysis.

The Nervous System.

1. Morbidly increased sensation.	1. Acute inflammation of brain and spinal marrow. Fevers. Hysteria.
2. Tensive pain.	2. Phlegmonous inflammation.
3. Dull, heavy pain.	3. Enlarged internal organs. Internal tumor. Effusion of water into cavities lined with serous membranes. Felt in the loins previous to discharge from menstruation, and from piles.
4. Smarting pain.	4. Scarf skin removed.
5. Shooting, tearing pains.	5. Neuralgia. Cancer.
6. Boring pains.	6. Constitutional syphilis. Rheumatism Gout. Inflammation of periosteum.
7. Contusive pains.	7. Bruises. Acute diseases.
8. Itching. Sensation as of ants creeping over the skin.	8. Several diseases of the skin.
9. Exaltation of vision.	9. Ophthalmia. Inflammation of brain. Some nervous diseases.
10. Black flecks floating before the eyes.	10. Affections of the brain and optic nerve. Dyspepsia.
11. Painfully acute hearing.	11. Inflammation of brain. Hysteria.
12. Dull hearing.	12. Typhus fever.
13. Increase of strength.	13. Delirium. Inflammation of brain. Mania.
14. Debility.	14. Most diseases.

15. Trembling.	15. Cold stage of fever. Nervous affections. Old age. Action on the system of lead, mercury, strong coffee, alcoholic drink, tobacco, opium.
16. Rigidity of upper extremities.	16. Softening of the brain. Infiltration of blood into the brain. Hysteria.
17. Cramp.	17. Pregnancy. Hysteria. Painters' colic.
18. Temporary spasm.	18. In convulsions of children. Some affections of the brain.
19. Pain at extremity of penis.	19. Stone in bladder.
20. Pain in right shoulder.	20. Congestion of liver.
21. Pain in left shoulder.	21. Disordered stomach.
22. Exaltation of affections.	22. Hypochondriasis.
23. Loss of moral sensibility.	23. Mania. Typhus fever. Masturbation.
24. Exaltation of intellect.	24. Melancholy. Sometimes indicates close of life.

The Breathing.

1. Stiffness of chest.	1. Cartilages turned to bone. Pleura hardened. Distortion from rickets.
2. Pressure upon parts.	2. Tumors. Dropsy of belly.
3. Obstruction of air-tubes.	3. Spasm of glottis. Spasm near the small ends of bronchial tubes. Mucus, etc., thrown out upon the inner surface.
4. Compression of lungs.	4. Effusions in pleurisy. Water in chest. Air in substance of lungs. Aneurism and other tumors.
5. Pain in parts moved in breathing.	5. Pleurisy. Inflammation of peritoneum.
6. Paralysis of muscles of chest.	6. Injury of spinal marrow.
7. Spasm of muscles of chest.	7. Locked jaw. Spasmodic asthma.
8. Deficiency of red blood.	8. Anæmia. Chlorosis or green sickness.

The Cough.

1. Hollow and barking cough.	1. Last stage of consumption. Chronic bronchitis. Some nervous affections.
2. Sharp, ringing cough.	2. Croup.
3. Hoarse cough.	3. Beginning of cold. Chronic laryngitis.
4. Wheezing cough.	4. Asthma.
5. Belching cough.	5. Some diseases of larynx.
6. Cough in paroxysms.	6. Hooping cough. Hysteria.
7. Cough sounding harsh and concentrated when listening with the stethoscope.	7. Consumption. Inflammation of the lungs. Pleurisy. Enlargement of bronchial tubes.
8. Cough sounding hollow, when listening with the stethoscope, as though it came from a cavern.	8. Tuberculous cavity. Enlarged bronchial tubes.
9. Cough having a metalic or ringing sound when listening with the stethoscope.	9. Large tuberculous cavity.

The Expectoration.

1. Scanty expectoration.	1. First stage of acute diseases of the lungs.
2. Copious expectoration.	2. Decline of acute diseases of air passages and lungs.

3. Watery expectoration.	3. Beginning of bronchitis. Congestion of lungs. Vesicular emphysema.
4. Mucous expectoration.	4. Bronchitis. Inflammation of lungs.
5. Expectoration of pus.	5. Consumption. Third stage of inflammation of lungs.
6. Expectorated matter shaped like coin (nummular).	6. Tubercular consumption. Bronchitis of measles.
7. Muco-purulent, floculent expectoration.	7. Consumption far advanced.
8. Tubular expectoration.	8. Plastic bronchitis. Pneumonia.
9. Whitish or greenish expectoration, that clings to the vessel.	9. Acute affections of lungs, particularly bronchitis.
10. Yellow expectoration.	10. Chronic bronchitis. Other chronic affections of the lungs and throat.
11. Rusty expectoration.	11. Inflammation of the lungs.
12. Putrid smell of expectoration.	12. Gangrene of the lungs.
13. Faint and sweetish smell of expectoration.	13. Bronchitis. First stage of consumption.
14. Expectoration smelling like garlics.	14. Broncho-pleural fistula.

Pain.

1. Dull, heavy, aching pain at the base of the chest.	1. Acute bronchitis.
2. Soreness about the breast bone, and between the shoulders.	2. Acute bronchitis.
3. Sharp, sudden, tearing pain below the nipple.	3. Pleurisy.
4. Pain darting from front part of chest to between shoulder blades.	4. Consumption.
5. Constant pain between the shoulders.	5. Consumption. Green sickness. Other chronic diseases.

The Pulse.

1. Strong pulse, resisting compression by the finger.	1. Inflammatory affections, especially of the substance of large organs, as the liver, etc.
2. Weak pulse, easily pressed down.	2. Prostration from disease. Nervous and chronic affections. Fear. Diseases of women and children, and old persons.
3. Full pulse, as if the artery were increased in size.	3. Congestion of brain. Apoplexy. Disease of heart.
4. Small pulse, opposite of full.	4. Inflammations of stomach, bowels, bladder, etc. Hysteria, and other nervous affections.
5. Hard, sharp, contracted pulse, — vibrating like a cord under the finger.	5. Inflammation of membranes. Active bleedings. Lead colic, etc.
6. Soft pulse, yielding readily to pressure.	6. Affections characterized by debility.
7. Frequent pulse.	7. Inflammatory diseases. Hemorrhages.
8. Slow pulse.	8. Apoplexy. Sometimes in disease of heart.

Relating to Digestion.

1. Tongue trembling and dry, and diminished in size.	1. Typhoid and other low fevers.
2. Voracious appetite.	2. Pregnancy. Hysteria. Insanity. Sometimes in dyspepsia.

3. Diminished appetite.	3. In most acute diseases.
4. Increased thirst.	4. Acute affections of stomach and bowels.
5. Thirst gone.	5. Cerebral disease, with coma.
6. Vomiting.	6. Early pregnancy. Colic. Disease of brain. Inflammation of stomach. Hernia.
7. Pain increased by pressure.	7. Inflammation of internal organs.
8. Pain relieved by pressure.	8. Over-distention of bowels. Neuralgia. Colic.
9. Urgent desire to go to stool.	9. Dysentery. Sometimes in diarrhœa.
10. Watery stools.	10. Diarrhœa. Cholera.
11. Mucous stools, like white of egg.	11. Chronic inflammation of colon.
12. Hard and lumpy stools.	12. Constipation. Colic. Cancer of stomach.
13. Clay-colored stools.	13. Deficiency of bile.
14. Yellow or dark-brown stools.	14. Too much bile.
15. Dark-green stools.	15. Bile from children after taking calomel.
16. Stools red, and streaked with blood.	16. Dysentery.
17. Pitchy black stools.	17. Melæna.
18. Stools pure blood, with no colic.	18. Bleeding piles.
19. Stools like rice-water.	19. Asiatic cholera.
20. Black stools.	20. Iron taken in medicine.
21. Shreds of false membrane in stools.	21. Dysentery. Diarrhœa. Worms.
22. Fat with stools.	22. Diabetes. Consumption.
23. Fetid stools.	23. Diseases attended by debility.

The Urine.

1 Diminished secretion of urine.	1. Dropsy. Inflammatory and febrile diseases.
2. Retention of urine in the bladder.	2. Paralysis. Typhoid fever. Hysteria.
3. Urine increased in amount.	3. Diabetes. Cold stage of fevers. Hysteria. Various passions of the mind.
4. Red or yellow sand deposits in urine (uric acid).	4. Fevers. Acute rheumatism. Consumption. Dyspepsia. Great indulgence in animal food.
5. White sediment in urine (earthy phosphates).	5. Depressed state of the nervous system, of serious import.
6. Oxalate of lime deposits in urine.	6. Derangement of digestion.
7. Blood in urine.	7. Bleeding of kidneys, etc.
8. Albumen in urine.	8. Bright's disease.
9. Mucus in urine.	9. Inflamed mucous membrane of urethra, bladder, etc.
10. Sugar in urine.	10. Diabetes.

The Perspiration.

1. Profuse perspiration.	1. Acute rheumatism. Decline of acute inflammations and fevers, being sometimes critical.
2. Diminished perspiration.	2. Early stage of acute disease. Dropsy. Diabetes.
3. Night sweats.	3. Consumption.
4. Sour smelling sweats.	4. Rheumatism. Gout.
5. Fetid smelling sweat.	5. Some debilitating fevers.
6. Sweat with mouldy odor.	6. Measles. Scarlet fever.
7. Smelling like ammonia.	7. Typhoid fever sometimes.
8. Sweat having the odor of mice.	8. Insanity.
9. Sweat smelling like rotten-stone.	9. Miliary.

The Temperature.

1. General heat of surface.	1. Fevers.
2. External local heat.	2. Inflammation.
3. Hot forehead.	3. Headache.
4. Hot scalp.	4. Disease of brain.
5. Skin of chest hot.	5. Inflammation in chest.
6. Hands and feet hot.	6. Consumption.
7. Acrid heat, burning the hand when applied.	7. Typhus fever.
8. Chills.	8. Beginning of fever.
9. Low temperature.	9. Poor circulation.
10. Cold hands and feet.	10. Nervous diseases. Dyspepsia. Impure state of the blood.

17

SKIN DISEASES.

The skin is the soft and pliant membrane which covers the entire surface of the body. The interior, like the exterior, is likewise covered by a skin, which, from its always being moist, is called a mucous membrane. At the various openings of the body, the outer and the inner skins are united, — forming one continuous skin, — like the same piece of silk turned over the border, and covering both the outside and inside of a bonnet.

From this continuity or oneness of the skin and mucous membrane, springs an important medical law, namely, that a disease of the skin may spread to the mucous membrane, and a disease of the mucous membrane may spread to the skin. We see this illustrated by the breaking out around the lips which follows colds, and the itching of the nose of children when the mucous membrane of the bowel is irritated by worms.

The Skin is Composed of Two Layers. — These are separated from each other by the action of a blister. The thin portion which is raised up by the fluid of a blister is called the *scarf skin*, the *cuticle*, or the *epidermis;* that which remains in connection with the body is the *sensitive skin*, the *cutis*, the *derma*, or the *true skin.* The two skins have very different offices to perform. The scarf-skin is horny and insensible, and serves as a sheath to protect the more sensitive skin under it. Were the scarf-skin taken off, we could not bear to have anything touch us.

The *derma*, or *true skin*, and its glands, etc., are the seat of all the cutaneous diseases. These may be separated into four great divisions, — namely, diseases of the *true skin*, diseases of the *sweat glands and tubes*, diseases of the *oil glands and tubes*, and diseases of the *hairs and hair glands.*

Then the diseases of the true skin are divided into

Inflammation of the true skin;
Enlargement of the papillæ of the true skin;
Disorders of the vessels of the true skin;
Disorders of the sensibility of the true skin;
Disorders of the color-producing function of the true skin.

The inflammation of the true skin is conveniently divided into two groups, — namely,

MEASLES

SCARLAT FEVER

Pl. 1.

Fig.1

Fig. 2.

Such as are marked by inflammation of the derma and mucous membranes, *with constitutional symptoms of a specific kind*, and

Such as are distinguished by inflammation of the derma, *without constitutional symptoms of a specific kind.*

Congestive Inflammation of the True Skin.

The First of these Groups, — those characterized by inflammation of the cutis, *with constitutional symptoms of a specific kind,* — embraces *measles, scarlet fever, varioloid, small-pox,* and *cow-pox.*

Measles. — *Rubeola.*

Measles is an acute inflammation of the entire skin, both external and internal, associated with an infectious and contagious fever.

Symptoms. — The disease sets in with chills, succeeded by burning heat, listlessness, languor, drowsiness; pains in the head, back, and limbs; frequent pulse; soreness of the throat; thirst, nausea, vomiting, frequent dry cough and high-colored urine. These symptoms increase in violence for four days. On the third day the eyes become inflamed, cannot bear the light, and pour fourth a profusion of tears. This last symptom is called *coryza.* The nose likewise discharges a large quantity of watery secretion, and sneezing is frequent. The larynx, windpipe, and bronchial tubes become inflamed, and hoarseness, soreness of the breast, etc., are the result.

The redness of the skin and breaking out appear about the fourth day, and produce heat and itching. This breaking out is characterized by a patchy redness, which, on close inspection, is found to consist of numberless minute red points and pimples, collected into patches in the shape of a half or quarter moon. They appear first on the forehead and front of the neck, then upon the cheeks and around the nose and mouth. On the fifth day they reach their height in this region, and then appear upon the body and arms, and on the sixth day, upon the legs. The color of the skin when the inflammation is at its height, is *of a bright raspberry red.* The decline of the rash takes place in the same order in which it comes out. The redness fades on the sixth day upon the face; on the seventh, upon the body and limbs; on the eighth, upon the backs of the hands. The coryza, the hoarseness, and the cough, decline about the seventh day, while a diarrhœa comes on about the eighth or tenth, — showing that the inflammation of the mucous membrane is subsiding. When the inflammation disappears, the whole scarf-skin peels off in the form of a scaly scurf. The artist has given a good picture of the disease in the beautifully colored lithograph, Plate I, Fig. 1. This plate is admirably done.

Treatment. — When the disease is mild and regular in its course, scarcely anything will be required, except mild diet, slightly acid drinks, with flax-seed tea, slippery elm, or some equivalent, to quiet the cough. Sponging with tepid water, if done with frequency, mod-

erates the fever, and adds to the comfort of the patient. If the fever runs high, take half an ounce of rochelle salt, and use recipe 51. Should the eruption "strike in," apply leeches or cups, over the internal organ affected, if any, and recall the rash by a mustard bath.

Those who have been exposed to the contagion, and are liable to have the disease, should avoid all unnecessary exposure to wet or cold, — keeping the feet warm and dry, and the whole body well clad. With these precautions, and a mild, unstimulating diet, much of the force of the disease may be broken.

During the first stages of the disease, bathing the feet once or twice a day with hot water, and freely using warm, sweating drinks, as saffron, summer-savory, pennyroyal, balm, and mullein tea, and putting mustard drafts to the feet, will hasten the coming out of the eruption.

Should the breaking out be delayed by excessive fever, give full doses of tincture of veratrum viride, or nauseating doses of ipecac, antimony, lobelia, or hive-syrup, and teaspoonful doses of compound tincture of Virginia snake-root.

Beside the milder forms of the disease, cases occur, chiefly in broken-down constitutions, in which the rash delays its coming out till the seventh day, and is then mingled with dark and livid spots, which remain, often, for ten or twelve days. The fever is of a low, typhoid kind, and the patient is extremely weak and languid.

In this condition of things, the patient must be supported by tonics (49), and stimulants (134), and expectoration promoted by some appropriate remedy (106), (124).

If at any stage of the disease, there should be fixed pain in any part of the chest, which is made worse by coughing, or by taking a full breath, we may conclude there is some inflammation of the chest; and it must be treated as directed for pneumonia.

Scarlet Fever. — *Scarlatina.*

This is likewise an acute inflammation of the entire covering of the body, both external and internal, connected with fever which is infectious and contagious.

Symptoms. — The fever comes on somewhere between the second and tenth day after exposure. On the second day of the fever, the eruption comes out in the form of very small points and pimples, which appear either in patches, or constitute a general redness, *of a bright scarlet color.* In Plate I, Fig. 2, the artist has given a fine picture of the disease.

The disease begins with languor, pains in the head, back, and limbs, with drowsiness, nausea, and chills; and these are followed by heat, thirst, etc. When the redness appears, the pulse is quick, and the patient is anxious, restless, and sometimes delirious. The eyes are red, the face swollen, the tongue covered in the middle with white mucus, and is studded with elevated points of extreme redness. The tonsils are swelled, and the throat red. The greatest degree of

redness is reached on the evening of the third or fourth day from its beginning, when a gentle moisture appears, the disease begins to decline, with itching, and the scarf-skin falls off in branny scales.

A swelling or puffiness of the flesh, which spreads out the fingers in a singular manner, seems to be peculiar to scarlet fever.

In the first stage of the complaint, the tongue, as stated above, is covered with a fur; but as it advances, the tongue often becomes suddenly clean, and presents a glossy, fiery-red surface, which is sometimes, with the whole lining of the mouth, raw and tender.

It is peculiar in this complaint, that the inflammation of the throat almost always runs into a state of ulceration. As far as can be seen, on pressing down the tongue, the throat is swollen and of a deep, florid red; and on the tonsils may be seen white or gray ulcers. This makes swallowing very difficult, and aggravates the sufferings of the patient. The great amount of mucus in these parts causes also a continual rattling in the throat.

The eustachian tube, which extends up to the ear, is apt to get involved in the inflammation, and cause swelling and pain in that region. The glands under the ear and jaw sometimes inflame, and after a time, they occasionally break. Abscesses formed in the ear, frequently produce some deafness which is not easily cured.

FIG. 72.

In the cell-dropsy, which sometimes appears after scarlet fever, the crystals of urate of ammonia may often be found in the urine with the microscope (Fig. 72).

This disease resembles measles; but may be distinguished from it by the absence of cough; by the eruption being *finer*, and of a more *scarlet color* (see plate); by the rash coming out on the *second* day instead of the *fourth;* and by the ulceration in the throat.

Treatment. — In ordinary cases, the treatment should be very simple. The apartment should be kept cool, and the bed-covering light. *The whole body should be sponged with cool water as often as it is hot and dry*, and the patient be permitted to take cooling drinks. Beside this, in many cases, very little is needed, except to give a few drops of the tincture of belladonna, night and morning.

In some cases where there is a good deal of fever and soreness of throat, give tincture of veratrum (124) often enough to keep down the pulse. It would be well also to begin the treatment of such cases with an emetic, (1) (4) (2). In addition to this, the feet and hands should be soaked in hot water, with a little ground mustard, or pulverized cayenne, stirred in. This bath should be continued twenty minutes, twice a day, for two or three days.

The cold stage having passed, and the fever set in, warm water may be used without the mustard, etc. If the head be affected, put mustard drafts upon the feet. Should the bowels be costive, they may be gently opened by some very mild physic.

No solid food should be allowed; but after the first shock of the disease is passed, drinks, in reasonable quantities, will be advisable,—such as cold water, lemonade, barberry and tamarind water, rice water, balm or flax-seed tea, and some thin water gruel.

To promote the action of the skin, the spirits of nitre, with other articles (125), adapting the dose to a child, will be found useful. The nitrate of potash is useful, given in one to three-grain doses, dissolved in water, every three or four hours.

The muriatic acid, forty-five drops in a tumbler filled with water, and sweetened, and given to a child in teaspoonful doses, is a good remedy

In very violent attacks, the system sometimes inclines to sink immediately; typhoid symptoms show themselves; there is great prostration; the eruption strikes in; the skin changes to a purple or mahogany color; the tongue is of a deep red, or has a dark-brown fur upon it, and the ulcers in the throat become putrid. This is called scarlatina maligna; but it is only a severer form of the same disease.

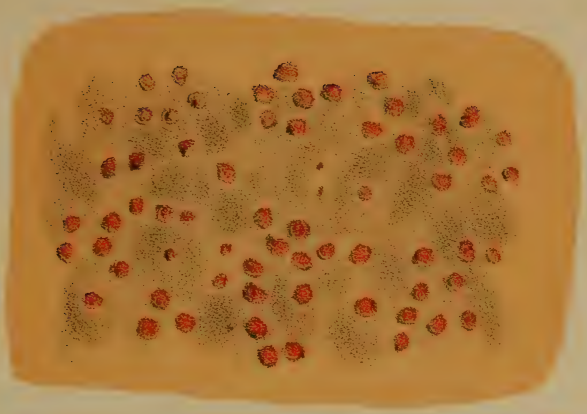
The treatment of this form must be different from that recommended above. It must be *tonic*. Quinia (65) must be freely given. Wine whey, mixed with toast water, will be useful. Tincture of cayenne, in sweetened water, may be given often in small doses. Ammonia (135) may likewise be given as a stimulus. Gargles (245) (244) (243) are also required.

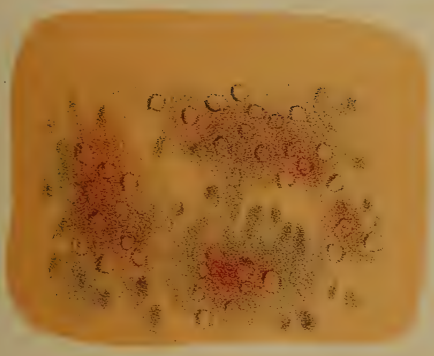
A dropsical affection is one of the most frequent results of scarlet fever. It is believed that this seldom occurs, if the warm bath is daily used, as soon as the skin begins to peel off. After the dropsy has set in, give the warm bath twice a week, and encourage perspiration by the compound tincture of Virginia snake-root, and similar articles. The child should have a generous diet, at the same time, to bring up its strength.

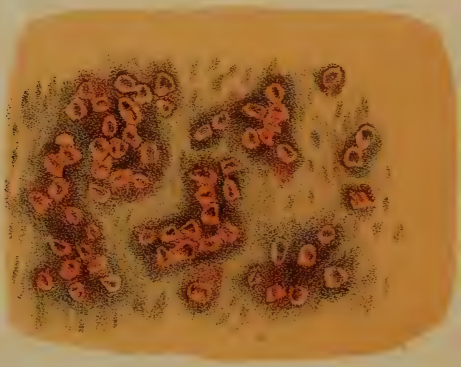
Small-Pox.—*Variola.*

This is another disease characterized by acute inflammation of the entire skin, both external and internal, connected with infectious and contagious fever. The eruption has the form of red points, which soon become pimples, then vesicles, then flattened and scooped-out vesicles, then pustules, and finally hard brown scabs. These last fall off from the eleventh to the twenty-fifth day, and leave behind them small pits and scars. The fever is remittent, and precedes the eruption some three or four days,—ceasing when the eruption is developed, and returning when it has reached its height. The period between exposure and the attack of the disease, called *incubation*, is from five or six to twenty days,—being short in the severe cases, and longer in the milder ones.

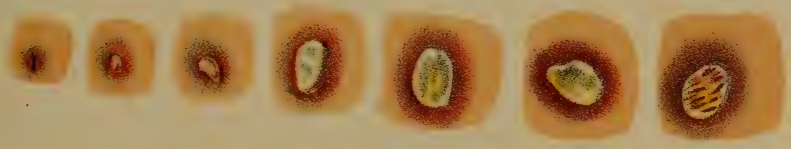
Symptoms.— The disease begins with languor and lassitude, with shivering, and pains in the head and loins; with hot skin, and quickened pulse and breathing; with thirst, loss of appetite, and furred tongue; with nausea, vomiting, constipation, restlessness, and uni-





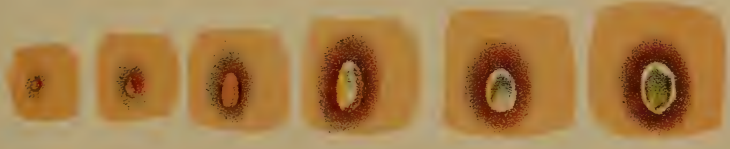


Progress of Small Pox



1st day 2nd day 3rd day 5th day 8th day 14th day 17th day

Progress of Varioloid



1st day 2nd day 3rd day 4th day 8th day 10th day

Progress of Vaccination

4th day 6th day 8th day 11th day

versal prostration. To these symptoms sometimes succeed, difficult breathing, cough, drowsiness, and even insensibility. The tongue, white at first, soon becomes red at the point, and over the whole surface. The fever is highest during the night. The constitutional symptoms are more violent just before the eruption, but immediately subside, and soon disappear, when the breaking out is established. The eruption is at first in the shape of small red points, which are *hard* to the touch, and shaped like a cone, and are proportionate in number to the subsequent pustules. In PLATE II, the artist has well exhibited the developed disease, as well as the progress of the eruption from day to day.

Treatment. — Like the two preceding diseases, the ordinary, uncomplicated form of this requires only the most simple treatment. Not much is wanted, except confinement in bed, cooling drinks, cool and even temperature, frequent change of linen, and sponging the body with cool water. But when what is called the fever of invasion is past, and the eruption is *fully developed*, and has brought along with it the *secondary fever*, then some recipe, as 131, (124) (125) will be in place, and some gentle laxative to keep the bowels open (8),—also gentle injections, (249) and opiates to relieve sleeplessness and nervous symptoms.

Should the system, at this period, appear to be sinking, a more generous diet, and a little wine may be allowed. If the brain suffers, apply leeches to the mucous membrane of the nose, or behind the ears, and put the feet in a mustard bath (242). If the breaking out appear with difficulty, put the patient into a warm bath, and tartrate of antimony, (104) or Dover's powders may be employed. Gargles will frequently be needed for the inflammation, and dryness of the mouth and throat (243). Cold sponging may be considered as highly beneficial, in both the primary and secondary fever. The belladonna likewise is a useful remedy, used in the same way as in scarlet fever. The plaster 288, applied to the face, will, it is said, arrest the formation of matter, and prevent the unsightly scars which so often cover the face of persons who have suffered from small-pox. Paint the face once or twice a day with glycerine, which will effectually prevent pitting.

Varioloid. — *Varicella.*

VARIOLOID, or modified small-pox, begins with symptoms similar to those of small-pox, but much milder in degree. These symptoms are feverishness, nausea, vomiting, pains in the loins and head, and a quickened pulse. The eruption comes out on the third or fourth day, and looks like that of small-pox. It reaches its height the fourth or fifth day, and then declines without any secondary fever. The pustules dry up and form brown scabs which fall off in a few days, and leave slight pits, and a few red or purple spots.

Varicella appears under a variety of forms, called "hives," "swine-pox," "chicken-pox," "horn-pox," etc. But they all have a family likeness, and need not be described. The treatment of all these forms must be conducted on the same principles with small-pox. Sponging

the skin in all these inflammatory conditions has the happiest effect, and should seldom be omitted.

Cow-Pox.—*Vaccina.*

This disease exists to some extent among lower animals, and is identical with small-pox in man. The immortal Jenner taught the world that the pus, taken from the cow having this disease, and introduced under the skin of man, would produce an eruption similar to that of small-pox, and that this would protect the system from the latter disease. This was an immensely important discovery, and will render the name of Jenner famous through all time.

It is a question of great importance how far vaccination, or inoculation with the matter of cow-pox, does, in fact, protect the system from small-pox. That it is a protection, to a certain extent, is doubted by none. That in some instances it protects through life, is likewise generally admitted. Is it a protection in all cases, and through the whole life? Perhaps not, though this is a disputed point. Probably the mild form of the vaccine disease does not impress the system powerfully enough to last more than a certain number of years. Most thinking physicians now believe it is wise to revaccinate occasionally, to make sure of the protection. It is done with little trouble, and may save a terrible infliction. Plate II, Fig. 4, gives a good idea of the appearance and progress of the eruption.

The Second Group of diseases, characterized by inflammation of the true skin, *without constitutional symptoms of a specific kind*, are Erysipelas, Nettle-Rash, False-Measles, and Inflammatory Blush.

Erysipelas.—*St. Anthony's Fire.*

Erysipelas is a diffused inflammation of the skin, affecting only a part of the surface of the body, and is accompanied by a fever, which is generally thought to be infectious and contagious. The local inflammation is disposed to spread; it extends deep, and is attended by swelling, a tingling, burning, and pungent heat, and by a redness, which disappears when the skin is pressed by the finger, and returns on remitting the pressure.

Symptoms. — The constitutional symptoms are chilliness and shaking, succeeded by heat; lowness of spirits, lassitude, pains in the back and limbs, pains in the head, quick and hard pulse, thirst, loss of appetite, white and coated tongue, bitterness of mouth, nausea, vomiting, pain in stomach, and costiveness.

These symptoms go before the local inflammation several days; they increase with the redness of the skin, and disappear upon its decline. The nervous system is sometimes severely affected, and indicated by low, muttering delirium. At the close of the inflammation there is generally a relaxation of the bowels, and the scarf-skin peels off. Sometimes matter forms under the skin, and occasionally mortification occurs. The face is the most frequent seat of

Fig. 1

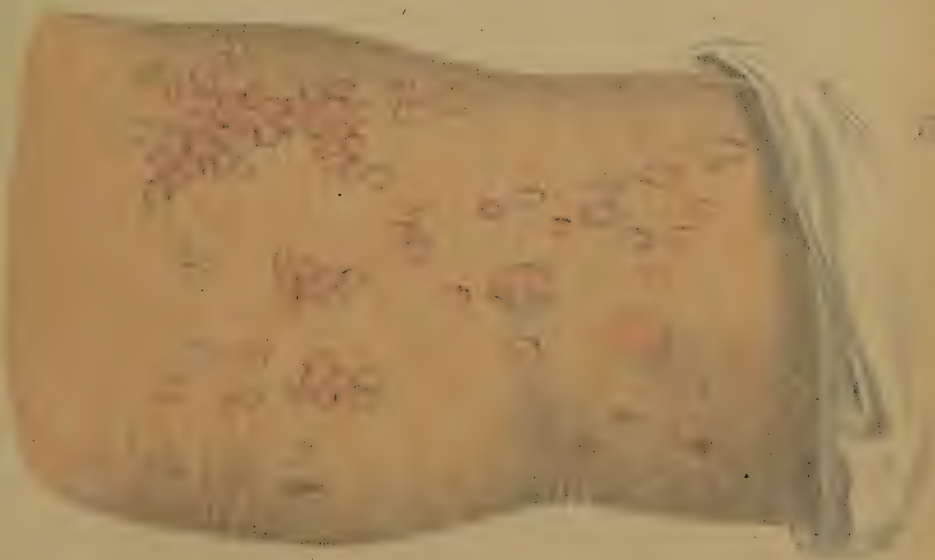


Fig. 2

[illegible] the happiest effect, [illegible]

[illegible]

[illegible] animals, and is [illegible] Jenner taught the [illegible] disease, and intro- [illegible] eruption similar to [illegible] system from the [illegible] discovery, and will [illegible]

[illegible] or inocu- [illegible] the system [illegible], is doubted [illegible] likewise [illegible] through the [illegible] Proba- [illegible] system [illegible] Most [illegible] and [illegible] a good idea [illegible]

[illegible] by inflammation of [illegible] *specific kind*, are [illegible] Blush.

[illegible] Fire.

[illegible] affecting only a [illegible] by a fever, which [illegible] The local in- [illegible] and is attended [illegible] by a redness, [illegible] and returns [illegible]

[illegible] and shak- [illegible] in the [illegible] first, loss [illegible] nausea, [illegible]

[illegible] days; [illegible] upon its [illegible] affected, and [illegible] the inflam- [illegible] scarf- [illegible] and occa- [illegible] seat of

Fig. 1.

Fig. 2.

the disease. It commonly begins on one side of the nose, and soon spreads over one side of the face, closing up the eye, and changing the features in a shocking manner. See PLATE III, Fig. 1.

Somewhere about the third, fourth, or fifth day, very minute blisters appear on the inflamed parts, filled with water, which increases until the blisters break and let it out. The disease comes to a head on the eighth or ninth day, when the blistered parts dry, and the skin begins to peel off.

Treatment. — In the treatment two things are to be done, — to subdue the fever, and the local inflammation. The fever is assuaged by rest, mild diet, gentle laxatives, (26) (21), etc.; and by the use of tincture of veratrum. For the local inflammation, various things have been advised, but nitrate of silver, on the whole, has the preference. First wash the inflamed part with soap and water to remove any oily substance, and wipe the skin dry. Then moisten the inflamed and surrounding skin, and pass over it a stick of nitrate of silver, touching not only the inflamed part, but going even an inch beyond it on all sides. Or, a solution of nitrate of silver and nitric acid, (214) will in many cases, according to Dr. Higginbottom, do even better. A solution of coperas (215) is a good application. So is 303.

In mild cases, flour may be dusted on the inflamed part from the dredging-box. Warm fomentations are also useful, and cloths wet with water, and laid on. A solution of per. chloride of iron, applied to the inflamed skin, is much used now.

In erysipelas the powers of the system are generally reduced, and tonics, such as quinine, wine, etc., are generally required. Dr. Robert Williams, — high authority in these matters, — says he puts his patients upon milk diet, gently opens the bowels, and gives them, daily, from four to six ounces of port wine, together with sago, and that he seldom has to change this course, whatever the symptoms.

For the inflamed skin, a tea made of buckwheat meal, is a good wash. Alcohol and water, or new rum, may be used for the same purpose.

Nettle-Rash. — *Urticaria.*

NETTLE-RASH begins with fever, which lasts two or three days, when wheals of various shapes, round, oval, and oblong, appear in the midst of red, slightly elevated patches, attended by great itching and tingling, as if the common nettle had been applied to the skin. The wheals go off during the day, and come again at night. The eruption is often a symptom of other diseases, or of mental anxiety. Sometimes it is the effect of articles of diet. Children have it occasionally while cutting teeth. A lighter form of the disease exists, in which the wheals appear and disappear at short intervals, according to the heat of the weather, the exercise, diet, etc.

Treatment. — The treatment varies according to the cause of the disease. If this be anything offending the stomach, especially if it be putrid fish, an emetic (2) (4) will be required, followed by brisk

physic (29). After which take a few doses of quinine (67). For external application, the lotion (216) or common vinegar and water (215) will be useful. Dr. Wilson recommends corrosive sublimate, etc. (217) as the very best lotion to apply outwardly.

The diet should be simple and cooling, all stimulating food and condiments being avoided.

Rose Rash.—*Roseola.*—*False Measles.*

Symptoms.— The summer rose rash appears first on the arms, face, and neck, thence it spreads over the whole body, producing tingling and itching. It is usually preceded by the symptoms of fever-chills, succeeded by flushes of heat, languor, pains in the head, back, and limbs, restlessness, quick pulse, and thirst. The rash appears in small irregular patches, paler than those of measles, and of a more roseate hue. There is some hoarseness from inflammation of the throat. The rash never continues more than five days, unless it be merely partial, in which case it sometimes comes and goes at intervals for weeks. If it "strike in," it generally produces disturbance of the stomach, headache, and faintness, which are relieved by its reappearance.

The autumnal rose rash is in more distinct patches than the former, of a circular figure, slightly elevated, and of a dark damask-rose hue. Seldom any fever, or itching and tingling.

Treatment.— For the first-described form of the disease, light diet, acid drinks, and gentle laxatives; for the second, recipe 59, or 51, according to convenience.

Inflammatory Blush.—*Erythema.*

What is called marginated inflammatory blush, is a mottled, red, smooth fulness of the skin, occurring on the extremities and loins, in irregular patches, bounded on one side by a hard, elevated, red border. This species of the disease attacks old people, and indicates some internal disorder, which is dangerous.

Another form of the complaint appears on the arms, neck, and breast, in extensive, bright-red, irregular patches, slightly elevated. The redness, at its height, is very vivid, and continues about a fortnight, when it assumes a purplish hue in the centre.

Treatment.— Light diet, gentle purgatives (21), opiates (218) to allay the tingling and secure sleep, and the mineral acids (63), with bitter tonics, comprise all that is required, except sponging with water, and friction.

Watery Pimples.

We now come to a class of diseases characterized by watery pimples. Wilson says they are distinguished by "effusive inflammation of the derma," which means that there is inflammation of the true skin, which causes water to be poured out on top of the derma, and

underneath the scarf-skin, causing the latter to be lifted up in the form of small or large blisters, or vesicles. At first the fluid in these pimples is transparent, but in a short time becomes milky. Sometimes this fluid absorbs; at other times, it dries up, and with the cuticle, scales off as scurf.

Salt Rheum. — *Eczema.*

An eruption of minute, round pimples, about the size of a pin's head, filled with a colorless fluid, and terminating in scurf. It is generally a symptom of a feverish state, and is preceded by languor, faintness, perspiration, and a pricking and tingling of the skin.

Another species of this disease is called sun heat, which is an eruption of vesicles without any redness, of a white or brownish color. These vesicles generally terminate in brownish-yellow scabs. It occurs only in summer, and affects those parts which are uncovered.

In still another species, the eruption is attended with pain, heat, itching, intense smarting, and a swelling of the affected part. When the blisters break, the water which runs out irritates and inflames the skin, which becomes red, rough, and thickened, — covered sometimes with a thick crust.

Treatment. — Low diet, cooling drinks, gentle purgatives, warm baths. In old chronic cases, apply externally either lime water, or corrosive sublimate (212) in solution. In the second and third forms of the affection, apply externally, a solution of nitrate of silver (219).

Tetter — Shingles. — *Herpes.*

After a slight feverish attack, lasting two or three days, clusters of small, transparent pimples, filled sometimes with a colorless, sometimes with a brownish lymph, appear on the cheeks or forehead, or on the extremities, — and at times on the body. The pimples are a little larger than in eczema, — about the size of a pea. After a few days, the vesicles break, pour out their fluid, and form brown or yellow crusts, which fall off about the tenth day, leaving the surface red and irritable. The eruption is attended with heat, itching, tingling, fever, and restlessness, especially at night. Ringworm is a curious form of herpes, in which the inflamed patches assume the form of a ring.

Treatment. — Light diet, gentle laxatives. If the patient be advanced in life, and feeble, a tonic (64) will be desirable. For external application, white vitriol (220), or an ointment of sulphuret of lime (174), or elder-flower ointment, etc. (175).

Itch. — *Scabies.*

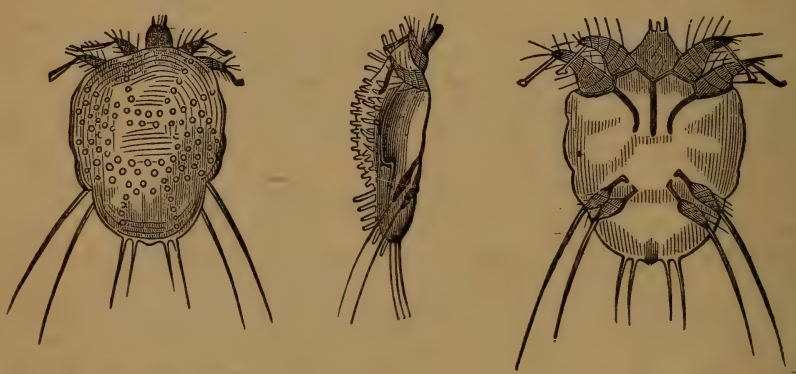
To this disease all classes are liable, though it is much less common than in former years. It is found frequently among the poor, whose condition in life does not give them the means to guard at all

points against it; but it is most common among such as neglect personal cleanliness.

Symptoms. — An eruption of distinct, cone-like, watery pimples, which are transparent at the summits, and are accompanied by an excessive itching, which is made worse by high-seasoned food, by drinking liquor, and by the heat of the bed. When these pimples are scratched and torn, a sticky, watery fluid is poured out, which forms small scabs; and, in time, if the disease is not cured, these scabs being often torn off, extensive sores are made.

Cause. — It will excite the wonder of many readers to state that animals of so small a size as scarcely to be seen with the naked eye exist in the skin of man. Yet such is the fact; and it is the presence of these minute creatures, or the effect of their presence, which constitutes the disease called itch. The little creature (*acarus scabiei*, by name), a species of *mite*, is one seventy-seventh part of an inch in length; and when closely inspected under the microscope, is really a beautiful, I may say an elegant, animal. Here are a front, a side, and a back view of him, well done by the artist.

FIG. 73. FIG. 74. FIG. 75.



His Method of Attack. — When placed upon the skin, the little fellow, like the squirrel and other ground animals, sets himself to make a hole through the scarf-skin with his head and fore feet. Into this he pushes his whole body. He then begins to burrow himself in the derma or true skin — making a channel many times his own length, at the end excavating a chamber where he sleeps, and whence he goes out to do his day's work at mining, or boring for food. When tired of this sleeping apartment, he digs onward and scoops out another.

This travelling, and boring, and turning about in an organ as sensitive as the true skin, must, of course, occasion a tickling and *itching*; and from this circumstance the disease took its name of *itch*. But this itching is not painful. James the First is said to have remarked that the itch was fitted only for kings — so exquisite is the enjoyment of scratching. Probably it is a royal luxury. Be that as it may, most persons would consent to have it all done by royal fingers. They have been used for meaner purposes.

Treatment. — Whatever will kill the little animal described above, will cure the itch. Various agents have been employed for this purpose, but none have been found equal to sulphur. The compound sulphur ointment is a sovereign remedy for the disease. Four ounces of this should be well rubbed into the skin, before the fire, morning and evening, for three or four days. This will put an end to the whole colony of these sovereign squatters upon forbidden soil.

Two ounces of sulphuret of potash, and the same amount of soft soap, dissolved in a pint of water, and applied well to the skin, is used in many cases with good effect.

Caustic potash, one part to twelve parts of water, applied in a similar way, is said to be a pretty sure remedy.

A solution of the chloride of lime, used as a wash, will often effect a cure.

The ointment of the American hellebore sometimes does well.

Before applying any of these preparations, let the skin be washed with warm water and soap, and well dried.

Rupia.

This is from a Greek word which means dirt, from the dirt-colored crusts which are formed after the breaking of the large watery pimples. The vesicles are like those of eczema and herpes, except that they are *larger*. This is distinguished from all other skin diseases by the formation of unhealthy, foul, and burrowing sores, which pour out a reddish matter in such quantities that it collects and dries upon the sore, and forms a crust of great thickness, — sometimes of the size of an oyster-shell. Rupia has its origin in a weakly and debilitated constitution, and cannot be cured without renovating the whole system.

Treatment. — Warm baths once or twice a week, with generous and nutritious diet. Tonic medicines (63) (51) (67) (61) (65) will be required. For external treatment, dust the surface of the ulcers with cream of tartar, or apply nitrate of silver (214) (219) (220), white vitriol, etc.

Pemphigus. — *Pompholix.*

The first of these terms is from the Greek, and means a *bubble;* the second, pompholix, is from the same language, and means a *water-bubble.* This is still more applicable to the disease in hand, which consists, in fact, in the raising up of the scarf-skin in the shape of bubbles, containing a watery fluid. These bubbles are just like common blisters. They vary from the size of a split pea, to that of a hen's egg. They rise up very rapidly, and break in two or three days, leaving a raw surface which soon becomes covered by a thin crust.

Treatment. — Similar to that for Rupia, with the addition of iodide of potassium (140), and applying the stick nitrate of silver to the

whole surface of the ulcer, and a short distance beyond it on all sides, or the ointment (176).

Mattery Pimples.

Another natural group of skin diseases are distinguished by an eruption of pimples, filled, not with water, like those just described, but with matter. The pimples of this class are not transparent, or whitish, but *opaque* and *yellow* from the first. The matter is poured out upon the true skin, and raises up the scarf-skin, in the same way as the watery pimples. As in the preceding diseases, too, the drying up of the matter forms crusts. But these pimples are never so small as those of eczema, nor so large as those of pemphigus.

Crusted Tetter.—*Impetigo.*

This eruption consists at first of slightly-elevated pustules or pimples, closely congregated, with an inflamed border. These break, and the surface becomes red, excoriated, shining, and full of pores, through which a thin, unhealthy fluid is poured out, which gradually hardens into dark, yellowish-green scabs. These scabs sometimes look like a dab of honey dried upon the skin. This has given impetigo the name of "honey disease," or honey scab. This honeyed look is well represented in the crusts which form on the lips and ears of children. Sometimes these scabs cover nearly the whole face, and are called the milk crust. This is putting the agreeable words *milk* and *honey* to rather questionable uses! When this crusted tetter invades the head or scalp, it causes the hair to fall, and becomes what is called a *scall.*

Treatment.— The vapor bath, and water dressing. The following ointments are useful: oxide of zinc, white precipitate, or diluted nitrate of mercury (178). Hydrocyanic acid (221), applied externally, has a fine effect. The crusts should first be removed by a weak lye made from hard-wood ashes, or potash; then, after applying one of the ointments above, or the lotion, cover the part with oil-skin. If the crusts are on the head, the hair should be cropped off before the remedies are applied.

Papulous Scall.—*Ecthyma.*

The mattery pimple called ecthyma is developed on a highly inflamed skin. The bladders are about the size of a split pea, and are surrounded by a broad ring of redness. They are generally separate, not clustered like impetigo. They are scattered over various parts of the body, and are followed either by a hard black crust, or by a sore. The disease is either acute or chronic. The latter attacks weakly children, and persons reduced by sickness or low living.

Treatment.— For the acute form, low diet, gentle laxatives, with ointment (176), and the cold sponge bath on the sound parts. For the

chronic form, (140) (65) (63) (61) (48) to be taken internally, and (176) (175) (214) (211) for external application.

Scaly Eruptions.

The scaly eruption is called dry tetter. It is an inflammation of the true skin, and is distinguished from the rashes and pimples by the alteration of the scarf-skin. The diseases forming this group are three in number, — *lepra*, *psoriasis*, and *pityriasis*.

Leprosy. — *Lepra.*

In this disease, the eruption makes its appearance as a small, salmon-red spot, raised a little above the surrounding skin, and constituting, in fact, a flat pimple, almost as large at the top as at the bottom. On top of this pimple, the scarf-skin becomes rough, and after a little while, a thin scale is produced. New layers are added to its under surface, and it accordingly grows thicker. It has a bright, silvery lustre. These scaly spots multiply, and become the form of leprosy called *lepra guttata*, from the Latin *gutta*, a drop, the scales looking like drops of water on the skin.

But the eruption more frequently spreads out into circular patches, of the size of a fifty cent piece. These generally appear below the elbows and knees, and on the breast and shoulders, and back of the hands. Sometimes the entire hand is covered with scales of a peculiar silvery whiteness. These patches heal from the centre.

Psoriasis.

This differs from lepra in the eruption being more irregular. The spots sometimes come out in thick clusters, and blend in various ways. Instead of appearing in distinct circular forms, as in leprosy, the patches are irregular, and of every size. Instead of one well-formed and thick scale, there are many small and thin ones. And instead of a depressed centre with rising edges, the surface is level. While leprosy is a circular dry tetter, this is an irregular dry tetter.

Pityriasis.

This is much like the two preceding, except that it gives rise to a copious production of very small bran-like scales. Indeed, its name is from the Greek, and means chaff or bran. It is a branny tetter. It may occur on any part of the body.

Treatment. — When the skin is highly inflamed, and stiff with heat, pain, and itching, the diet should be light, and the drinks of a cooling and unexciting kind. The warm bath, and gentle friction of the skin are useful. Laxatives or tonics may be employed, according to the indications, — frequently laxatives first, and tonics afterwards. The specific remedies for curing the disease are, corrosive sublimate (139),

odide of potassium (140), arseniate of iron (68), Fowler's solution, in two-drop doses, three times a day; or Donovan's solution, in five-drop doses, three times a day. For external application, use a napthaline ointment (177), zinc ointment, white precipitate ointment, diluted nitrate of mercury ointment, or solution of corrosive sublimate (212).

Dry Pimples.

These are distinguished by the high degree of irritation of the skin which they create. They are exceedingly troublesome, not only from the distress and itching they occasion, but because they are likely, in consequence of this to be torn into painful and obstinate sores.

When appearing in children, they are called *red gum*, and *tooth-rash*. In grown persons, one form is named *lichen*, and another, distinguished by excessive itching, *prurigo*.

In this form of pimples, the fluid is not poured out upon the *surface* of the true skin, — as in several of the preceding diseases, — but is collected within the tissue of this organ, and the pimples feel hard under the finger.

The tooth rash of infants is always accompanied with some feverishness, caused generally by irritation of gums from growing teeth, — occasionally by flannel worn next the skin.

Lichen has a variety of forms. In one case the pimples are of a bright red, in another, bluish or livid. In one case they appear in circular groups, in another, they produce great disorganization of the skin, and occasion terrible suffering.

Prurigo is a still more cruel disease than lichen. The pimples are not very manifest, but the skin is thickened or swollen, and condensed. The suffering from it is terrible. It gives one no sleep, night or day. That form of it called ant-bite prurigo, gives the sensation of millions of ants eating the flesh, or as many red-hot needles piercing it. This renders the existence of many elderly persons a terrible burden.

Treatment. — Careful diet, and gentle cathartics or tonics, according to the condition of the system. Externally, the cold salt-water sponge bath, and glycerine, applied with a soft sponge, vinegar and water, corrosive sublimate (222), creosote ointment, the diluted nitrate of mercury ointment, laudanum and sulphur (179), prussic acid, etc. (171). For relieving the terrible itching of the private parts, which females sometimes suffer, I have found morphine (223), for external use, very effectual.

Lupus.

This makes its appearance in the form of one or more circular elevations, of a dull red or salmon-color, and partially transparent. When pressed under the finger, these elevations are found to be soft, and when the finger is removed, they are flat and whitened. They generally appear on the face, and particularly the nose.

In another and worse form of the disease, the tubercles are harder; and after a time, they become covered with thin brown scabs, which are scratched off, and followed by others, and these by others, until ulcers appear, which are sometimes slow and sometimes rapid in their progress. The whole nose has been destroyed by them in a month. (See Fig. 76.) This is one of the diseases which Erasmus Wilson thinks, and, in my judgment, correctly, to be, like scrofula, the result of the syphilitic poison, filtered through the blood of several generations. (See colored PLATE IV.) The artist has here given a beautiful likeness of the disease.

FIG. 76.

Treatment. — The internal remedies are iodide of arsenic (141), and iodide of potassium (140); the external, vinegar of Spanish flies; and to promote the healing of the ulcers, a weak solution of nitrate of silver (211) (214) is adapted.

Warts and Corns. — *Verruca* — *Tylosis* — *Clovus.*

IN the derma or true-skin, there are a great many small arteries, veins, and nerves, united together, and formed into loops (see cut 43), resembling, in shape, the peaks of miniature mountains. These are called *papillæ*. These loops, frequently, without any apparent cause, take on a disposition to grow, and by extending themselves upward, they carry the scarf-skin along with them, which is thickened; and together they form what is called *warts*. Corns are formed by a somewhat similar growth of the papillæ, brought about by the pressure and friction of tight boots and shoes.

Treatment. — For warts, take a piece of diachylon plaster, cut a hole in the centre the size of the wart, and stick it on, the wart projecting through. Then touch it daily with aqua fortis. Nitrate of silver sometimes answers well for touching it. They may be taken off very neatly, sometimes, by tying a string tight around them. Corns should be shaved down close, after being soaked in warm water and soap, and then covered with a piece of wash-leather, or buckskin, on which lead plaster is spread, a hole being cut in the leather the size of the corn. They may be softened, so as to be easily scooped out, by rubbing glycerine on them. Manganic acid destroys warts and corns rapidly. Bunions, which affect the joint of the great toe, must be treated with fomentations, and sugar of lead water (224), when there is considerable inflammation, with rest and a horizontal position. But the best cure for corns and bunions, is to put away tight shoes.

Mother's Marks. — *Nevus.*

The small vessels of the skin, called capillaries, suffer certain alterations of structure which pass under the name of mother's marks. These marks are simply a great dilatation of these minute blood vessels. These marks vary in size from a mere point to a patch of several inches square.

The smallest of all is the *spider mark.* It is a small red point, from which several little straggling vessels spread out on all sides. Sometimes this is of the size and appearance of a red currant; at other times, of a strawberry or raspberry; and occasionally it is even much larger, and is compared to a lobster.

When the circulation is active through them, or the individual is excited by exercise, or by moral causes, these marks are of a bright red color. Some are naturally livid and dark-colored, and look like blackberries, and black currants. The blueness of these is owing to the vessels being still more stretched and dilated, and to the consequent slower passage of the blood through them, which gives more time for its change from the arterial red to the venous blue.

Treatment. — If the mark is not making progress, it had better be let alone, or only subjected to gentle pressure by putting a piece of soap plaster over it. When its course is threatening mischief, it is sometimes cured by pencilling a small portion of its surface, from time to time, with nitric acid.

Disordered State of the Nerves of the Skin.

Itching. — *Pruritus.* This is supposed to be dependent on an altered condition of the nerves of the skin, and consists in a painful sensation of itching. There is no perceptible alteration in the appearance or structure of the skin. This itching is thought, generally, to be a result of sympathy, through the nerves, with some diseased and excited condition of a distant part. The itching is brought on by the most trifling causes, and for hours may deprive the sufferer of every particle of repose. It more frequently affects the fundament, or the private parts, particularly the scrotum.

Treatment. — As this disease is only a symptom of several others, the constitutional treatment belongs under the heads of these other diseases. The local applications for relieving the itching are, a solution of sugar of lead (224), of white vitriol (220), of corrosive sublimate (212), diluted nitrate of mercury ointment, and poppy fomentations. Also (223).

Disorders Affecting the Color of the Skin.

Colored Patches. — *Maculæ.* The depth of color in the skin depends on the amount of a certain coloring matter, called pigment, incorporated with the deeper and softer portion of the scarf-skin. In the

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Disorders Affecting the Color of the Skin.

Colored Patches.—*Macules.* The depth of color in the skin depends on the amount of a certain coloring matter, called pigment, incorporated with the deeper and softer portion of the scarf-skin. In the

scarf-skin of the inhabitants of northern latitudes, there is but little of this pigment; in that of the dwellers in Africa, there is a great deal; among the inhabitants of Southern Europe, the quantity is intermediate between the two.

The depth of color in the skin, depends on the energy of its action. In the tropics, where light and heat are in excess, the skin is stimulated to great action, just as vegetation is, and the color is increased and intensified. This is illustrated every year before our eyes. In summer under the heat of the sun and the flood of light, the pigment-forming power is increased, and the fairest skin is browned; while the withdrawal of these forces, leaves the winter's scarf without pigment, and blanched.

What the sun and light do, under natural circumstances, diseased action may effect. Hence we occasionally meet with alterations of color in the skin, from a disordered state of the system. We witness the formation of patches of dark color and irregular shape on various parts of the body. Sometimes they are raised above the level of the skin, and are called *moles*. At other times, they have no elevation, and spread over the whole body.

Occasionally, from some peculiarity of constitution, the pigment is diminished, and white patches appear all over the body. At other times, a black person will become completely white. Such are called *albinos*.

In many cases the coloring of the skin has *varieties* of tint, as when persons of light complexion, are, in the summer season, covered with yellow spots, like stains. These spots are known by the name of *freckles*, or, in learned language, *lentigo*.

Treatment. — It is generally best not to meddle with a mole. If it be very unsightly, let it be removed by two incisions, taking out an elliptical portion of skin, and closing the wound with sticking plaster. In the case of bleached places, apply the shower bath, tonics, and a stimulating liniment (163) to the faded spots. For the change of color called sun-burn, a liniment (191) of lime water, etc., is the best preparation. For freckles, use lime water (191), or, perhaps, still better (222).

Disorders of the Sweat Glands.

The perspiration is sometimes greatly increased above nature's design. This is, technically, *idrosis*. In other instances there is too little sweating. This is called *anidrosis*. Sometimes the perspiration is so altered in its physical qualities as to have some peculiar smell. This is *osmidrosis*. In some rare instances, according to old writers, she sweat was changed in color. This was *chromidrosis*. And now and then a case occurs of bloody perspiration, of which, the most memorable case on record, is that of the Redeemer of men, who, in the garden, sweat great drops of blood. Several cases of this are recorded in medical books. It is called *hæmidrosis*.

The proper action of the skin being so vitally important to health, these changes often involve very serious consequences.

Treatment. — Either too much or too little sweating can generally be corrected by the cold or warm bath, friction, tonics, and proper clothing.

Disorders of the Oil-Glands and Tubes.

That the skin may be limber, healthy, and fit for use, it is necessary to have it oiled every day. For this object, the Creator has wisely provided, by placing in the true skin a large number of very small glands and tubes, whose office it is to prepare and pour out upon the surface the proper amount of oil. The gland, regular little oil-pot, is in the true skin; and from it a piece of hose or tube runs up through the scarf-skin, through which the oily fluid is poured out. Some of these tubes are spiral, others are straight. On some parts these vessels do not exist; on others they are quite abundant,— as on the face, nose, ears, head, eye-lids, etc. They produce the wax of the ears; and on the head, they open into the sheath of the hair, and furnish it with a hair-oil or pomatum better than the chemist can make.

These little vessels are always at work, when the skin is healthy; and no persons need be afraid to wash all over every day, lest, as the Boston *Medical Journal* taught, the skin will be injured by having the oil removed from it. You might as well be afraid to eat a meal of victuals, lest the saliva should all be swallowed with it, and none be left for future use. There is oil enough where that upon the skin comes from, and the vessels which produce it are not injured by work, any more than the muscles of the legs are by walking.

Grubs or Worms. — But, unfortunately, the skin is not well taken care of in all cases, as in cities and towns where sedentary habits prevail. Here, the actions of the skin, instead of being regular and complete, are often sluggish and imperfect; and the contents of the oil-cells and tubes, instead of flowing easily, become hard and impacted, and the vessels are not emptied. When this matter becomes stationary, dry, and hard, it distends the tube, and fills it to the surface; and then coming in contact with the dust and smoke of the atmosphere, the ends become black, and look like the heads of worms. These spots are common on the nose and face of persons who have a sluggish skin. They may be squeezed out by pressing the nails on each side of them. These are called *grubs* and *worms*, or, technically, *comedones*. When this matter produces inflammation of the tube, there is then a black spot *in the middle of a red pimple*, and the disease is called *spotted acne*. Now and then the oily matter becomes very hard, producing spine-like growths, and even horns (Fig. 77); and again, it collects and forms soft tumors, as wens, etc. These are technically

Fig. 77.

called *encysted tumors.* Sometimes the action of the glands is too great, and oil is poured out so profusely that the face shines with it. At other times there is so little that the skin is dry and harsh. In the hardened, oily matter, which constitutes grubs, are found small animals, which Dr Wilson calls the "animal of the oily product of the skin." Here are three views of him.

FIG. 78.

FIG. 79

FIG. 80.

Treatment. — For roughness and harshness of skin, wash with soap and water every night, and rub well into the skin after the bath, and in the morning, the ointment (180), and take a dose of sulphur, etc. (23), twice a week. Or, *rub* the skin every morning with a damp sponge, dipped in fine oat-meal, and after drying the surface, the liniment (164) may be applied. The spinous variety, or porcupine disease, requires washing with a quart of warm water, having a large teaspoonful of saleratus dissolved in it, and the use of the ointment (181) twice a day. For grubs, stimulate the skin, by washing it with strong soap suds, twice a day, and rubbing briskly with a coarse towel; and by using the corrosive sublimate (225) as a lotion.

A spare diet will do much towards improving the skin in many cases.

Barbers' Itch—Jackson's Itch.—*Sycosis.*

THIS is very much like *acne*,— only differing from it in its location. It appears chiefly on the hairy parts of the face,— the chin, the upper lip, the region of the whiskers, the eyebrows, and the nape of the neck. It consists in little conical elevations, which maturate at the top, and have the shaft of a hair passing through them. These pimples are of a pale yellowish color. In a few days they burst, and the matter running out, forms into hard, brownish crusts. These crusts fall off in one or two weeks, leaving purplish, sluggish pimples behind, which disappear very slowly.

The eruption is preceded by a painful sensation of heat, and tightness of the skin.

The disease is supposed to be brought on frequently by using a dull razor in shaving. It is very obstinate, — often lasting for many months, and even for years.

Treatment. — The most important part of the treatment is the removal of the cause. The beard must not be pulled with a dull razor; the shaving had better be discontinued altogether, and the beard be merely cropped off with scissors instead. All intemperance in eating and drinking, and exposure of the face to heat, must be avoided. A light, cool diet will do much towards curing the disease.

The nitrate of mercury ointment, and a solution of oxalic acid, are the best applications. If one does not succeed, try the other.

Disorders of the Hair and Hair Tubes.

The hair is an appendage to the scarf-skin, and is intended to be both useful and ornamental.

It is subject to several disorders. It may grow too long, or too thick, or it may appear in an improper place. This last happens in the case of those little spots and patches, which disfigure the face, and are called *moles*. The hair may be defective in its growth, or may fall off prematurely from various causes, or in the natural course of things from old age. This last is called *calvities*. It may change its color, too, under a great variety of circumstances, and at nearly every age. It is not very uncommon to find a single lock varying in color from that which surrounds it. Old age, the winter of life, naturally brings the frosted locks; but they frequently appear also upon the heads of younger persons. Strong mental emotions, such as fear, grief, or sorrow, may bring a bleaching of the hair in a brief period, or even suddenly. Byron, in his "Prisoner of Chillon," beautifully refers to this fact:

> "My hair is gray, but not with years,
> Nor grew it white
> In a single night,
> As men's have grown from sudden fears."

Porrigo. — There is a troublesome disease of the hair and hair tubes called *porrigo*. It begins with the formation of a thin layer of scurf either around single hairs, or in patches which enclose several. These patches frequently have a circular form, which give to the affection the character of a *ringworm*. The hair tubes are generally a little elevated, in the shape of papillæ, which gives to the diseased scalp the appearance of "goose-flesh." These hairs, losing their proper nourishment and healthiness, break off at unequal distances from the skin, leaving their rough ends, twisted, and bent, and matted into thick grayish and yellow crusts. Upon the surface of these crusts may generally be seen the ends of a few hairs, looking like the fibres of hemp or tow. The scratching causes inflammation of the skin after a time, and matter is poured out, which still further mats the hair,

and thickens the crusts. There are several varieties of this disease, differing slightly from each other; but this general description will answer all practical purposes for this work.

The reader will often notice a disease of the hair-glands, characterized by a yellowish and dirty-looking powder, covering the scalp and hairs. This matter is collected at the mouths of the follicles, and considerable of it is strung upon the hairs like beads. Pull out a hair, and the root will be found thin, dry, and starved in its appearance. In this disease, it is difficult to keep the hair cleansed, or to prevent its falling off.

Favus. — Still another disease, called *favus*, is known by the collection of a yellow substance, at first, around the cylinder of the hair. This substance, after a time, spreads out upon the scarf skin, and dries into yellow crusts, in the form of a cup, around the base of each hair. A number of these cups, collected together, look like the cells of a honey-comb. This disease is contagious, and is communicable by contact to any part of the skin.

Treatment. — For removing the hair from particular parts of the scalp, it is common to resort to *depilatories*. Of these, the recipes 260, 261, 262, are frequently used, and are as good as those advertised; indeed, they are the same.

To prevent loss of hair, and to restore it when lost, the circulation should be stimulated in the small vessels of the scalp. With this view, washing the head every morning with cold water, drying it by friction with a rough towel, and brushing it to redness with a stiff hair-brush, are excellent. To these should be added some stimulating ointment (183), or liniment (257) (258) (259). These last are about the best known preparations for causing the growth of the hair.

Ringworm of the scalp requires attention to the diet, and such remedies as will improve the general health, with stimulating applications externally (257) (258) (259).

To color the hair, several preparations are used. Of these, 263 is about the best. It produces a beautiful black. A preparation of sulphur and sugar of lead (264) is the famous compound recommended by General Twiggs, and extensively used. Preparations of nitrate of silver (265) (266) (311) are much in use in some quarters. They perhaps give a finer black to the hair, but they render it dry and crisp, and they will stain the skin, if care is not used in applying them.

In Favus, the two great objects to be gained are, to remove all local causes of irritation, and to excite the diseased hair glands to healthy action. The first object is effected by cutting off the hair with the scissors, and removing the crusts by washing the scalp with castile soap and water. It may be well first to wet the crusts through with corrosive sublimate (212), in weak solution. The washing with soap and water should be repeated every day, and be followed by rubbing into the scalp a stimulating ointment (183). A very weak solution of the acid nitrate of mercury (226), applied every other day, with a camel's hair brush, sometimes produces excellent effects.

DISEASES OF THE BRAIN AND NERVES.

THE brain and spinal cord are the great centres of the nervous system.

The brain produces *sensation*, *thought*, and *voluntary motion*. When this organ is diseased, therefore, we may expect one of these functions to be either disturbed or destroyed.

Of Sensation there are various disturbances, perversions, and suspensions, caused by disease of the brain and nerves; such as nausea, giddiness, specks floating before the eyes, ringing in the ears, deceptive tastes and smells, intolerable itching, neuralgic pains, boisterously high spirits, depression without apparent cause, anxiety, and dread.

Thought, in like manner, is disturbed and perverted in many ways. There is high delirium, dulness and confusion, loss of memory, weakened judgment, and every degree of stupor, down to entire loss of consciousness.

Voluntary Motion is perverted and destroyed in muscular twitchings, trembling of the limbs, spasmodic stiffness, involuntary jerkings, convulsions, muscular debility, and palsy.

The brain is composed of three parts, — the *cerebrum*, the *cerebellum*, and the *medulla oblongata*. These are all contained within the skull bones, and are immediately covered by three membranes, called the *dura mater*, the *arachnoid*, and the *pia mater*. The dura mater is a strong, *fibrous* membrane lying next to the skull-bones. The arachnoid is a *serous* membrane, lying next below, and the pia mater, which means pious mother, is a *vascular* membrane, lying next to the brain, dipping into it in places, and containing the vessels which bring to it all its nutrient materials. Hence its name.

These membranes are all liable to be inflamed, — and so is the brain

Inflammation of the Dura Mater.

THE inflammation of this membrane does not often occur spontaneously; but it happens frequently from external injuries, as blows upon the head.

After a blow upon the head which stuns him, a man may recover himself, and for some days remain in perfect health. Then he has

pain in the head, is restless, cannot sleep, has a flushed face, red eyes, hot skin, hard pulse, rigor, nausea, vomiting, — ending with convulsions and delirium.

This disease is often caused by what is called *otitis*, or inflammation of the internal ear. In such cases, inflammation will arise within the tympanum, causing intense earache; matter comes at length from the external ear, but the pain does not stop; the patient shivers, becomes drowsy, perhaps delirious, and finally sinks into stupor. The dura mater is inflamed.

Treatment. — When the disease arises from inflammation in the ear, leeches are to be applied behind the ear, and blisters and other irritants afterwards. Other modes of treatment will be mentioned after the next two forms of disease.

Inflammation of the Arachnoid and Pia Mater.

Arachnitis.

These two membranes are generally inflamed together. They are so intimately connected that each involves the other in its own troubles.

Generally this is divided into three stages:

The Irritative, characterized by wakefulness, irritable temper, repugnance to strong light, and contraction of the pupils.

The Inflammatory stage, known by transient pains in the head, alternating with similar ones in the bowels, increased restlessness and irritability, a quick and tense pulse, an expression of discontent on the face, the eye-brows knit and frowning, the eye-lids half closed, retching and vomiting, deep sighing, and torpid bowels.

The Depressing Stage, in which the delirium is more continuous, the countenance has a look of surprise and stupor, the pupils are contracted or dilated, the white of the eyes injected and red, the pupils rolled up during sleep, constant sleepiness, inattention to surrounding objects, torpidity of mind, gradually increasing until complete coma closes all the senses.

The disease does not always exhibit all these symptoms, or come on in the regular way described. Sometimes the first thing noticed is a long-continued paroxysm of general convulsions. Again these convulsions will come on after violent pains in the head, and are attended with screaming.

Inflammation of the Brain.—Brain Fever.

Encephalitis. — Phrenitis.

Acute and general inflammation of the brain and its membranes has two stages.

The Stage of Excitement, in which there is intense and deep-seated pain in the head, extending over a large part of it, a feeling of tightness across the forehead, throbbing of the temporal arteries, a flushed

face, injected eyes, looking wild and brilliant, contraction of the pupils, great shrinking from light and sound, violent delirium, want of sleep, general convulsions, a parched and dry skin, a quick and hard pulse, a white tongue, thirst, nausea and vomiting, and constipation of the bowels.

The Stage of Collapse, in which there are indistinct mutterings, dull and perverted hearing and vision, double vision, the pupil from being contracted expands largely and becomes motionless, twitchings of the muscles, tremors and palsy of some of the limbs, a ghastly and cadaverous countenance, cold sweats, profound coma, and death.

The disease will not show all these symptoms in any one case. It runs a rapid course, causing death, sometimes, in twelve or twenty-four hours; or it may run two or three weeks.

Treatment. — This should be energetic and administered *early.* The measures usually employed are *blood-letting*, *purging*, and the *application of cold to the head.*

General Blood-letting. — This is much approved by many; for myself, I do not like it. Wet cups and leeching are about the extent to which I would ever carry the abstraction of blood in these diseases. These may sometimes be applied with advantage to the neck, and behind the ears.

Cold Applications. — These, applied to the head, are of great importance. First, shave the head, and put on cloths wetted in water as cold as it can be made, changing them often; or, put powdered ice in a flexible bladder, and lay it upon the head, — taking care not to make it too heavy.

Purging. — This, while the inflammation is in the active stage, should be thorough and energetic. To effect it, many use calomel and other forms of mercury. They are not needed. Croton oil is one of the best articles (31), or calacynth, gamboge, etc. (32), without the oil, or the compound powder of jalap.

In the stage of collapse, if there is pallor of the countenance, a feeble and flying pulse, great debility and tremors, coldness of the extremities, etc., give wine and other stimulants.

See that the bladder is emptied every day.

The feet, in the early stage of the complaint, should be bathed in warm water, or mustard and water (242). Mustard draughts must also be put upon the feet.

The tincture of veratrum, given in full doses, to bring down the pulse, and produce sweating, must not be omitted.

Softening of the Brain. — *Ramollissement.*

Inflammation of the brain, when it has run its course, sometimes leaves this organ, or portions of it, in a softened condition. The same mischief may happen to the brain from the blood-vessels which run to it being diseased, so as not to be able to carry blood for its proper nourishment.

Symptoms. — The most remarkable symptom of this disease is the rigid contraction of the muscles which draw up the limbs; the hand may be clenched and pressed against the shoulder, or the heel carried up to the hip.

The other symptoms are various, — tingling and numbness in the ends of the fingers; perverted vision, and sometimes blindness; paralysis of one limb, or half the body; difficulty of answering questions; forgetfulness, making it difficult, at times, for the patient to remember his own name.

Suppuration and Abscess of the Brain.

When a diseased brain is examined after death, sometimes matter is found mixed in with the softened portion. This shows that suppuration took place. At other times, the matter is found in a cavity, which shows that an abscess had formed during life.

The symptoms of these mischiefs are convulsions in the earlier stages, and palsy in the latter.

Induration of the Brain.

Instead of softening the brain, inflammation sometimes does the very opposite, — it hardens it, — producing a change something like that which happens to white of egg when dipped in hot water.

Convulsions appear as the result of this change, as in suppuration and abscess; palsy much more seldom.

Tumors of the Brain.

Tumors infect the brain, occasionally, — growing around it, on all sides, pressing themselves into its substance, and causing many disturbances. Cancers and hydatids are found there. The signs which these irritating bodies produce, are like those of other diseases of the brain, and therefore cannot be distinguished during life.

Delirium Tremens.—Drunkards' Delirium.

Mania a Potu.

This is often mistaken for brain fever; but it is quite a different disease. It is not the result of *inflammation* of the brain, but of *irritation*. It is important to distinguish it from inflammation, because the remedies which are employed for that would be injurious if used for this.

The Symptoms are incessant talking, fidgeting with the hands, trembling of the limbs, a rapid pulse, profuse sweating, utter sleeplessness, and a mingling of the real with the imaginary in the busy talk. The patient is apt to think some one is about to do him a great injury, yet is unwilling to be alone. His face is pale and sallow (sometimes red and flushed), his eye is rolling, quick and expressive, his speech

stuttering and inarticulate, — bodily and mentally, he is *busy* day and night, and can with difficulty be confined to his bed or room. As the disease advances, and he has been long without sleep, he imagines vermin to be crawling upon his scalp and body; troops of rats run across his bed, or look at him out of the wall; giant boxers confront him, and he squares off for a round at fisticuffs; animals, figures of all shapes, and horrible monsters, frighten his imagination; devils laugh at him, and dance before him. In long and sleepless hours, he talks and chatters with these spectral phantoms, — now beckoning them, now shrinking from them, till he wears out and sinks from exhaustion. This is a disease of drunkards and opium eaters. The attack generally occurs in consequence of the withdrawal for three or four days of the accustomed stimulus.

Treatment. — Opium and its preparations are the sovereign remedy. Give one-third of a grain of morphia; if this does not quiet the patient, give thirty drops of laudanum every two hours, till sleep is produced. Sleep will cure him, and nothing else will. A draught or two of his accustomed drink, brandy, gin, or whatever it may be, will also generally dispose him to sleep.

Recently, a very effectual remedy has been found in the use of tepid baths, prolonged from four to ten hours, in connection with cold applications to the head. In connection with this, small doses of opium are required; but the treatment may yet prove to be very valuable by enabling us to dispense with excessive doses of opium.

Enlargement of the Brain. — *Hypertrophy.*

This is chiefly a disease of childhood. It consists in an unnatural growth of the brain. Sometimes the skull grows with it, and there may not be any, or only slight, symptoms of disease.

The complaint is sometimes congenital, — the child being born with a head far above the natural standard of size. Sometimes a child's head, from this disease, will reach the size of an adult's, by the time it is five or six years old. This is not necessarily a *disease*, though children that suffer from it are very apt to die finally of some affection of the brain.

Symptoms. — Dulness of intellect, indifference to external objects, great irritability of temper, inordinate appetite, giddiness, and an habitual headache, which at times is very severe. In addition to these, there are, at times, convulsions, epileptic fits, and idiocy. There is a peculiar projection of the parietal bones, which serves well to distinguish this disease from acute hydrocephalus.

Treatment. — As far as possible, suspend and repress all exercise of the mind. Take the child from school as soon as the disease is discovered, and put it to the most active muscular exercise in the open air. The moment there is any excitement of the brain, or heat on the top of the head, apply cold water, ice, or cold evaporating lotions. If, as the child grows up, the signs of mischief increase, the diet must

be simple, and carefully regulated. Bread and milk only is sometimes advisable.

Shrinking of the Brain.—*Atrophy.*

This is a disease in which the volume of the brain is diminished. There are two forms of it; one is congenital, the brain not being properly developed at birth; the other occurs in consequence of disease either in the membranes or the arteries. The symptoms are not distinguishable during life from those of other brain affections, and therefore it can only be treated according to general principles.

Water in the Head.—*Acute Hydrocephalus.*

This, like enlargement of the brain, is likewise a disease of childhood, and often attacks *scrofulous* children.

Being an inflammatory disease, it is important to have early notice of its existence, and, if possible, to be aware of its *approach;* which we may be, frequently, by observing the following *premonitory*

Symptoms; namely, a disturbance of the disgestive functions, indicated by a capricious appetite,—the food at one time being disliked, at another devoured greedily; a foul tongue, offensive breath, enlarged and sometimes tender belly, torpid bowels, stools light-colored from having no bile, or dark from vitiated bile, fetid, sour-smelling, slimy and lumpy. The child loses its healthy look, and grows paler and thinner. Its customary spirit and activity are gone; it is heavy, languid, dejected; it is fretful, irritable, uneasy; and sometimes is a little tottering in its gait.

After these warning symptoms, the disease may begin in one of three ways:

The pains in the head become more severe and frequent, and are sharp and shooting, causing the little patient to wake and shriek out. As the drowsy state advances, the shrieking gives place to moaning. Beside these symptoms, there are stiffness in the back of the neck, pain in the limbs, great tenderness of the scalp, vomiting, sighing, intolerance of light, knitting of the brows, increased disturbance of stomach and bowels. This stage may last ten to fourteen days, the child growing more weak and peevish.

Another form of attack is marked by acute pain in the head and high fever, convulsions, flushed face, brilliant eyes, intolerance of light and sound, pain and tenderness in the belly, stupor, great irritability of stomach, causing retching and vomiting upon every attempt to sit up in bed.

The third mode of attack is very insidious,—the early symptoms being mild and hardly noticeable, or not even occurring at all. In such case, the convulsions or palsy come suddenly, without notice, bringing swift and unexpected destruction. This has sometimes been called *water-stroke.*

The First Stage is the period of *increased* sensibility and excitement, caused by inflammation, in which the pulse is quick and irregular.

The Second Stage is one of *diminished* sensibility, or lethargy, during which water is effused upon the brain, and the pulse is slow.

The Third Period is one of palsy and convulsions, with squinting of the eyes, rolling of the head, stupor, and a rapid, thread-like pulse.

Treatment. — In the first or inflammatory stage, purging is very important, and it must be continued for three or four days. Scammony and croton oil (33) may be chosen for this purpose. Apply cold water, ice, etc., to the head.

In the second stage, put blisters upon the back of the neck, and one upon the bowels if they are very tender.

In the third stage, effusion having taken place, use the warm bath, or the vapor bath, — also digitalis, squills, and iodide of potassium, (144) (128) (302) (130).

Confine the child to a darkened room, of moderate temperature, — excluding all noise and causes of excitement, and let him lie upon a hair mattress, with his head somewhat elevated.

Diet. — Gruel only during the stage of excitement, — during that of collapse, it should be nourishing, but mild and easy of digestion, as beef tea, plain chicken or mutton broth, and animal jellies. At the same time, support the patient by the cautious use of the aromatic spirit of ammonia, ten drops every four hours, valerian, wine whey, and infusion of gentian, columbo, or quassia, (64) (66).

Dropsy of the Brain.—*Chronic Hydrocephalus.*

Acute hydrocephalus is an *inflammation; chronic* hydrocephalus, now to be considered, is a *dropsy.* It often begins before birth. It consists in the accumulation of enormous quantities of water within the brain, sometimes within its ventricles, at other times, upon its surface. When it occurs soon after birth, it advances slowly, and imperceptibly, — the enlargement of the head being the first thing noticed.

The skull being tender in infancy, it separates at the fontanelles, as the fluid accumulates, and the head, at times, attains an enormous size, — so great that the child cannot carry it upright, but lets it droop laterally upon the shoulder, or forward upon the breast.

As the disease advances, the senses become blunted, the child is deaf or blind, the intellect is weakened, perhaps idiocy appears, the flesh and strength pass away, convulsions and paralysis come in their turn, and a stupor is apt to occur which ends in death.

Treatment. — The remedies may be external, or internal, or both.

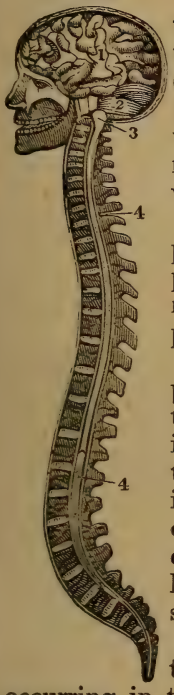
Internal Remedies. — These should be purgatives (33) (31), or diuretics and alteratives (302) (145) (144).

External Remedies. — Apply an ointment of the iodide of potassium to the scalp every night (185). A tight bandage applied over

the whole head will sometimes have a favorable effect. Another expedient is to puncture the skull and draw off the water. Tapping the brain has effected a cure in many cases, and perhaps promises the most relief of any remedy we have.

Diseases of the Spinal Cord.

FIG. 81.



THERE are few diseases more interesting, as a study, than those which affect the nervous cord which runs through the centre of the back-bone. This cord is a continuation, an appendage or tail of the brain. (See Figure 81.) It is the seat and centre of certain nervous functions, called *reflex*, by which so many movements take place which are not under the control of the will.

In order that we may feel what takes place in any part of the body or limbs, and that the will may have power to move such part, it is necessary that nervous matter should be continuous and unbroken between the part in question and the brain.

If the spinal cord be cut, broken, or crushed at any point, all those parts which receive nerves from *below* the injury, lose their power of motion and their feeling. When the injury is in the upper part of the cord, the breathing and the circulation will stop, and death is the immediate consequence. If the middle portion of the cord be the seat of the injury, the bowels and other organs may lose their motion and feeling; if the lower portion, then the lower limbs only will be the sufferers.

Disease or injury in the upper part of the cord is therefore much more dangerous than the same thing occurring in the lower.

Inflammation of the Spinal Cord.

THE membranes which surround the cord may be inflamed just as those are which enclose the brain; but as the cavity running through the spine is quite small, there cannot very well be inflammation of the membranes without its involving the cord at the same time.

Symptoms. — Pains, often intense, running along the spine, extending out into the limbs, and made worse by motion. They are similar, in some respects, to rheumatic pains. There is rigid contraction, and sometimes violent spasms of the muscles of the back and neck, — so great, at times, as too bend the body back into the shape of a hoop; also a feeling of constriction in various parts, as if they were girt by a tight string; a sense of suffocation; retention of urine; a most obstinate constipation; and frequent chills or rigors. The pain which is felt along the cord is aggravated by rapping upon the spine, but not by pressure.

The above symptoms are supposed to be the result of inflammation predominating in the membranes. When its seat is more particularly in the substance of the cord, the symptoms are, — convulsive affections of the head and face, inarticulate speech, loss of voice, squinting, and difficulty of swallowing, if the extreme upper part of the cord is inflamed; if the disease be slightly lower, difficulty of breathing, irregular action of the heart, and tightness of the chest; if lower still, vomiting, pain in the belly, sensation of a cord tied round the abdomen, pain and heat in passing water, retention of the urine, inability to retain the urine, desire to go to stool, or involuntary stools.

Spasm and stiffness, then, are the results of inflammation of the membranes; convulsions and palsy, of the same affection of the cord.

Treatment. — When the inflammation is acute, apply a few leeches or wet cups along the sides of the spine. In chronic inflammation, powerful friction, or mustard draughts, stimulating liniments (190), or plasters, will generally answer the purpose.

Apoplexy.

Apoplexy is that condition in which all the functions of animal life are suddenly stopped, except the pulse and the breathing; — in which there is neither thought, nor feeling, nor voluntary motion; in which the person falls down suddenly, and lies as if in a deep sleep.

Modes of Attack. — There are at least three ways in which this terrible disease may make its assault.

The First Form of attack is a sudden falling down into a state of insensibility and apparently profound sleep, — the face being generally flushed, the breathing stertorous or snoring, the pulse full and not frequent, with occasional convulsions.

From this mode of attack some die immediately, others get entirely well, and others get off with the exception of paralysis on one side, or the loss of speech, or some one of the senses.

The Second mode of attack begins with sudden pain in the head. The patient becomes pale, faint, sick, and vomits, — has a cold skin and feeble pulse, and occasionally some convulsions. He may fall down, or be only a little confused, but will soon recover from all the symptoms, except the headache, — this will continue, and the patient will sooner or later become heavy, forgetful, unable to connect ideas, and finally sink into insensibility, from which he never rises.

This mode of invasion, though not appearing so frightful as the first, is of much more serious import.

In the Third form of attack there is sudden loss of power on one side of the body, and also of speech, but not of consciousness. The patient retains his mind, and answers questions either by words or signs. This may be called paralytic apoplexy. The patient may either die soon, or get well, or live for years, with imperfect speech, or a leg dragging after him, or an arm hanging useless at his side.

The Persons Attacked are apt to have large heads, red faces, short and thick necks, and a short, stout, square build, though it occurs often among those who are thin, pale, and tall. The tendency to it increases in advanced life.

The Forerunners of apoplexy are headache, vertigo, slight attacks of palsy, double vision or seeing two objects when there is but one, faltering speech, inability to remember certain words, sometimes a sudden forgetfulness of one's own name, a frequent losing of the thread of ideas attempted to be pursued, and occasionally an unaccountable dread, for which no reason can be given.

Exciting Causes. — Whatever hurries the circulation of the blood, as strong bodily exercise, is an exciting cause. So are all those things which cause the blood to flow towards the head, as coughing, sneezing, laughing and crying, straining at stool when costive, lifting heavy weights, singing, and playing on wind instruments. To these may be added, exposure to the sun, the bad air of crowded rooms, holding the head down, or turning it around to look backward, tight cravats worn about the neck, and exposure to severe cold.

Treatment. — If the patient have the appearance of suffering from fulness of blood in the head, as evinced by redness and turgescence of the face, and throbbing of the temporal arteries, and if the pulse be full and hard, feeling like a tense vibrating rope under the finger, place him in a half-recumbent posture, with his head raised; loosen his clothes, particularly his neck-cloth and shirt collar, and whatever may press upon the neck, and then as quickly as possible apply cold wet cloths to his head, changing them often. Ice is still better, if it may be had. Apply wet cups to the nape of the neck, and mustard draughts to the soles of the feet, — at the same time applying tight ligatures around the limbs, to prevent the blood from returning rapidly in the veins. The ligatures should be gradually removed when the patient recovers his consciousness. Also administer a stimulating, purgative injection (246), and place two drops of croton oil, rubbed up with a little pulverized loaf sugar, far back upon the tongue. Repeat the injection every fifteen minutes, till the bowels are thoroughly moved.

If the patient be old, and the pulse small and feeble, with no fulness or beating of the temporal arteries, or swelling of the veins of the neck and forehead, the countenance being pinched, and the skin bloodless and cool, the cupping, purging, and applying the ligature must be omitted. In this case it will be better to apply warm flannels and hot bricks to the surface, and administer ammonia and camphor (283) (135) internally.

To prevent future attacks, gentle tonics should be used, and the skin should be kept healthy by daily bathing and friction. The bowels must not be permitted to become costive. The diet should be light, chiefly vegetable, and almost entirely so in hot weather. The food should be well chewed. The mind should be kept cheerful and hopeful, and free from great excitement. The sexual passion should be restrained, and very rarely indulged. Intoxicating drinks should be

abandoned, if used, and all tight cravats be discarded from the neck. Direct rays of the hot sun in summer should be carefully shunned. No food should be taken for three hours before retiring, and a mattress only, of some degree of hardness, should be slept upon, — the head being always well elevated. To these precautions, I would add, dipping the feet every night, before retiring, in cold water; and, if any tendency to cold feet be experienced, dusting pulverized cayenne in the bottoms of the stockings.

Sunstroke. — *Coup De Soleil.*

This is much like apoplexy; in fact, it is a kind of apoplexy. It occurs in warm climates, or in very hot days in temperate regions, by exposure to the sun.

It begins by headache, thirst, dizziness, and sometimes difficult breathing and bilious vomiting. The patient drops down senseless, as in apoplexy, and unless immediate relief is obtained, soon dies.

Treatment. — Take the patient immediately into the shade, and employ about the same remedies as for apoplexy.

Palsy.—Paralysis.

Palsy is a loss of the power of voluntary motion and feeling, one or both coming on, sometimes gradually, but more often suddenly, and extending at one time to a part, at another time to the whole body. It is a kind of station-house on the way to apoplexy, where passengers stop, not merely to stay over night, but to rest many days, or even years.

A great injury inflicted upon the brain, either by pressure, or other cause, will induce a complete loss of motion and feeling, and this extending to the whole structure, brings likewise a loss of consciousness, which is apoplexy. A smaller degree of pressure, or a less injury upon the same brain, would occasion a loss of motion only, or, if a loss of feeling were experienced also, it would only extend to a part of the body, and consciousness would remain. This would be palsy. The disease is like apoplexy in kind, but stops short of it in degree.

Hemiphlegia.

When palsy affects an entire half of the body, dividing it through the centre of the face, neck, body, etc., from head to foot, it is called *hemiphlegia.* It is more nearly allied to apoplexy than any other form of the disease, and is generally ushered in by pretty well-marked apoplectic symptoms.

Symptoms. — Sometimes there are no premonitory symptoms; but often before the attack there are flushed face, swelling of the veins about the head and neck, vertigo, a sense of fulness, weight, and sometimes pain in the head, ringing in the ears, drowsiness, indistinct

articulation of words, or even loss of speech, confusion of mind, loss of memory, and change of disposition, — amiable persons being made sullen and peevish, and irritable ones mild and simpering. After the attack, the countenance generally acquires a vague expression; the mouth is drawn to one side; the lower lip on the palsied side hangs down, and the spittle dribbles away. The speech is altered, and the mind is generally impaired.

In some instances, the patient recovers in a longer or shorter time; in others, little or no improvement takes place, and the patient, after remaining helpless, often for a long time, dies either from gradual exhaustion, or suddenly from apoplexy.

Causes. — Hemiphlegia and paraphlegia, are caused by pressure upon the brain, by the effusion upon it of blood or water, by a tumor, by mechanical injuries, by the striking in of eruptions, and by intemperance in eating and drinking. Paraphlegia often results from disease or injury of the spinal marrow.

Paraphlegia.

This form of palsy divides the body *transversely*, at the hips, and confines itself to the lower extremities, and to the parts about the pelvis.

Symptoms. — When it arises from affections of the brain, it is attended by pain in the head, giddiness, drowsiness, dimness of sight, and impaired memory. Numbness is sometimes felt in the upper extremities as a forerunner of this form of palsy. At first there is a slight stiffness and awkwardness of the motions of the legs, which continue to increase till a cane is needed to balance the body and make it steady. From a paralysis of the neck of the bladder, the stream of urine grows more feeble, and finally dribbles away involuntarily. The bowels are for a time costive, but when the circular muscle which closes the fundament becomes palsied, the feces pass without consent of the will.

When disease of the spinal cord is the cause of the complaint, it is apt to come on gradually; languor and weakness are felt in the knees, the legs are not easily directed in walking, — being thrown across each other, causing tripping and stumbling. By degrees the loss of power increases in the thighs and legs, until at length the whole lower extremities become palsied and useless.

Local Palsy.

Palsy is called *local* when it is confined to a single limb, or muscle, or locality. One of these forms is called *facial* palsy. It affects one half of the face only, and is a good specimen of these affections. It removes all power of expression from one half of the face, and leaves the features still, blank, and unmeaning. With the affected side of the face, the patient cannot laugh, or weep, or frown, or express any feeling or emotion, while the features of the other side are in full play. Among the ignorant, who do not comprehend the extent of the evil, the drollness of the expression excites laughter.

Shaking Palsy.

The nature of this form of palsy is well expressed by its name.

Symptoms. — The first symptom of this complaint is a weakness and tremor of the head or hand. In about a year the other hand, or the lower extremities become affected; and the patient begins to lose his balance in walking. Then the trembling becomes perpetual; no limb or part remains still. Reading and writing are no longer possible, and the hand cannot even carry the food to the mouth. The balance cannot be maintained in walking; there is a tendency to fall forwards, and to avoid it, the patient is obliged to run or move quicker, and upon the toes.

At a later period, the tremor continues during sleep; there is increased weakness; the body is bent forward, the speech becomes indistinct, swallowing difficult, and the bowels torpid. At last, the urine and feces pass involuntarily, and delirium and coma bring life to a close.

Lead Palsy.

In this disease the muscles of the forearm are palsied, so that the wrists "drop," as it is said, and the hands hang down when the arms are stretched out. It is caused by the gradual introduction of lead into the system. It is a disease, therefore, peculiar to painters, — particularly those who use carbonate of lead, or white lead, as it is called. It is generally the sequel of painter's colic.

Treatment. — A sudden and severe attack of palsy requires the same treatment as apoplexy. When the bowels are obstinately constipated, they must be purged by scammony and croton oil (31) (32,) and by injections (246).

When all the symptoms of determination of blood to the head have disappeared, and the disease has become strictly chronic, exciting remedies must be employed, as frictions, stimulating liniments, blisters, stimulating baths, cold affusion, and electricity. Among the internal remedies, strychnine has the best reputation (85) (86). The tincture of the poison oak is well recommended (284). An alterative (145) should likewise be used.

Apply counter-irritants along the track of the spine, such as blisters, the moxa, the compound tar plaster, and the pitch plaster.

At first the diet should be light; but after the more active symptoms have disappeared, it should be nutritious, and sometimes stimulating. Flannel under-clothes should always be worn next the skin.

For lead palsy, the best remedies are iodide of potassium, or sulphuret of potassium. The dose of either of these is from three to ten grains, three times a day, dissolved in water, one ounce of the salt to six ounces of water, and taken in simple syrup. The affected limb should also be soaked an hour each day in a gallon of water, with half an ounce of sulphuret of potassium dissolved in it.

Hydrophobia.—*Rabies.*

The bite of the mad dog, or mad wolf, or other hydrophobic animal, is the most dangerous of all poisoned wounds, because it is apt to be followed by a disease for which there is no certain remedy. Fortunately, the human subject is not as susceptible to the effects of the poison as some of the lower animals; for only about one-tenth of those bitten are attacked by hydrophobia.

Symptoms. — The interval between the bite and the appearance of the disease, varies from twelve days to two months. The wound heals like any other bite of a similar animal. After a time, the scar begins to have darting, lancinating pains, which, if it be a limb that was bitten, run up towards the body. Sometimes it feels cold, or stiff, or numb, or becomes red, swelled, or livid, and occasionally breaks open, and discharges matter. The patient feels a strange anxiety, is depressed in spirit, has an occasional chill, and disturbed sleep, and spasmodic twitches. The pulse is above its natural state, both in quickness and strength, and the nervous system is very impressible. The senses are all more acute; trifling noises produce agitation, and the eyes are so disturbed by the light that the patient sometimes hides himself in a dark place. The appetite is lost. This is the first stage.

Thirst now appears, and he attempts to drink. But the moment water approaches his mouth, a spasmodic shudder comes over him; he pushes it back with horror; the awful fact of his condition flashes upon him; and he cries out, "What I have dreaded has come upon me."

Thenceforward he can swallow no fluids; complains of pain and stiffness about his neck; is thrown into convulsions by the sight of water, or even the sound of liquids agitated in a vessel, or by a breath of air blowing upon him, by a bright light, or the glare of a mirror. His throat is full of a viscid, glairy matter, which he continually tries to clear away. Thus, between convulsions, in which he struggles, and sometimes strives to bite his attendants, and comparative stillness, during which he suffers great depression of spirits, he passes three or four days, and then dies either in a spasm, or from exhaustion.

Treatment. — Cut off the bitten part, or apply dry cupping, or suction, at once. Also the caustic potash. The internal remedies heretofore employed have had little success. Perhaps nothing now known promises more than to keep the patient, for a long time, under the influence of chloroform or ether. The tincture of scullcap, in two or

three dram doses, will allay the nervous agitation, and is always worth using. It has been proposed to clear the throat of the tough mucus by cauterizing it with a strong solution of nitrate of silver (219), applied with a shower syringe. The remedy is worthy of a trial.

Some of the Western physicians declare the red chickweed, or scarlet pimpernell, to be an absolute remedy for this disease, and cite some quite remarkable cases of its success. Four ounces of this plant, in the dried state, are directed to be boiled in two quarts of strong beer or ale, until the liquid is reduced one half. The liquid is to be pressed out and strained, and two drams of laudanum added to it. The dose for a grown person is a wine-glassful every morning for three mornings. A larger dose is required if the disease have begun to show itself; and if the case be fully developed, the whole may be taken in a day. The wound is to be bathed with the same decoction. The medicine, it is said, produces profuse sweating. It is worth a trial.

Considerable has been said of late of a remedy used in some parts of Europe, and said to be effectual. It is the "golden cenotides" (*cetonia aurata*), or common rose beetle, found in large quantities on all rose trees. A similar insect is said to infest the geranium plant. When collected, they are dried and powdered; and given in this form, relieve excitement (so it is said) of the brain and nerves, and throw the patient into a sound sleep.

Muscular and Nervous Derangements from Wounds.

In some persons, a very small local injury will produce violent disturbance of the nervous system. Some will faint and be thrown into convulsions and vomiting from causes scarcely greater than the prick of a needle; and, before Morton gave the world the boon of ether, it was not very uncommon for persons to die under the knife of the surgeon. One of the most serious disturbances from wounds, of a nervous and muscular character, is

Locked Jaw.—*Tetanus.*

This is spasmodic contraction, with rigidity, or stiffness, of the voluntary muscles. Sometimes this rigidity is partial, at other times, universal throughout the system.

Tetanus is produced by two causes, *exposure to cold* (idiopathic), and *bodily injuries*, particularly the *injury of a nerve* (traumatic tetanus). This last is the most frequent,—perhaps the only form of the complaint.

The Symptoms are long-continued, violent and painful contraction or cramp of the voluntary muscles. At first there is difficulty and uneasiness in turning the head, with inability to open the mouth easily,—then the jaws close gradually, but with great firmness; swallowing now becomes difficult, and a pain, starting from the breast-bone, pierces through to the back,—probably caused by cramp of the

diaphragm or midriff. The cramps now extend to the muscles of the body, the limbs, the face, the tongue, etc., which continue in a state of rigid spasm,— being swelled and hard in the centre,— till the disease yields, or the patient dies. At times the abdominal muscles are so tense as to make the belly as hard as a board. Occasionally the patient is drawn backward into the shape of a hoop, so as to rest on his head and heels (*episthotonos*); at other times he is drawn forward in the shape of a ball (*emprosthotonos*). All the contractions are attended with intense pain. It is the racking of the entire body with cramps like those which sometimes attack the calf of the leg. So violent are the contractions that the teeth are sometimes broken by them, and the tongue is often badly bitten. In the mean time, the appearance of the sufferer is frightful. The forehead is wrinkled, the brow knit, the eye-balls motionless and staring, the nostrils spread, the corners of the mouth drawn back, the set teeth exposed, and all the features fixed in a ghastly grin.

Treatment. — The only known remedies for this disease are chloroform and ether, taken either into the stomach, or by inhalation, in quantities sufficient to control the spasm, and to be pursued as long as they continue to occur. The costiveness must be removed by one or two drops of croton oil, administered in a spoonful of gruel.

Epilepsy.—Epileptic Fits.

This disease has been sometimes called the *falling sickness*, but generally passes under the more vague title of *fits*.

Symptoms. — The disease is characterized by a temporary loss of consciousness, strong spasms, and intervals between the fits. The attack is sudden, generally without warning, and attended with a loud cry, when the patient falls down, is senseless and convulsed, struggles violently, breathes with embarrassment, has a turgid and livid face, foams at the mouth, bites his tongue, has a choking in the windpipe, and appears to be at the point of death. Presently, in from five minutes to half an hour, and by degrees, these symptoms diminish, and at length cease; and the patient falls into an apparent sleep. In a short time more he recovers, and is apparently well. These attacks come again and again, and at irregular intervals.

This is the worst form of the disease; there is another class of cases in which the symptoms are much lighter, — there being no turgescence of the face, no foaming at the mouth, no cry, no convulsions; but merely a sudden and brief suspension of consciousness, a fixed gaze, a feeling of confusion, or a totter, from all of which the recovery is speedy.

Causes. — These are numerous, — as worms, disturbance from indigestible food in the stomach and bowels, difficult teeth-cutting, nervous irritation, either direct or by sympathy, sexual excesses and masturbation, disease or injury of the brain or spinal marrow, gall stones in the excretory duct of the liver, stone or gravel in the kid-

neys and bladder, fright, distress of mind, passion, great loss of blood, and many others.

Treatment.— But little can be done during the fit, except to protect the patient from being injured by the violence of the convulsions. To do this, place a piece of leather, cork, or other substance not too hard, between the back teeth to prevent the tongue from being bitten. Remove the neckcloth, and unbutton the shirt collar. If the stomach and bowels are suspected to be overloaded, give an injection (246).

The treatment during the intervals, must depend on the cause of the disease. If worms be the cause, expel them; if the attacks be excited by difficult teething, lance the gums; if by uterine disturbances, search out the nature, and give the treatment recommended under the proper head; if masturbation, command its entire discontinuance as the only hope of relief; if the complaint arise from indigestible food, great attention must be given to the diet and general health.

In all cases, indeed, the diet should be carefully regulated, being light, nutritious, and easy of digestion. The sleep should be taken at regular hours, and daily exercise in the open air be insisted upon. The bowels must be kept regular, by the food, if possible; if not, by mild laxatives. Apply along the spinal column 195, once a day, rubbing it well in; also, now and then, mustard poultices.

In addition to these remedies, give pills of iron and quinine (72), one after each meal,—also oxide of zinc (270), which is one of our very best remedies. Of the pills, one should be taken three times a day.

We can seldom go amiss in giving medicine calculated to relieve nervous irritation, and to build up the general system. For this purpose, the valerianate of quinine, and the extract of black cohosh (79) are well adapted. Citrate of iron and strychnine (316), is a very valuable remedy.

It is said that a black silk handkerchief thrown over the face of a person in a fit, will immediately bring them out of it. It is an experiment easily tried; and having seen it in a respectable medical journal, I give it for what it is worth.

Catalepsy.—Trance.—Ecstasy.

Cataleptic fits are simply what is known to all the world under the name of *trance;* and *ecstasy* is a modification of the same nervous disorder. It is a state in which the mind becomes so intensely absorbed in something outside of its earthly tenement, that it withdraws all control over the body, and all apparent connection with it,—leaving it as if dead. There is a very light ticking of the heart, just perceptible to a cultivated ear, but the breast does not rise and fall with breathing, the features are all inexpressive and still, the eyes are wide open and motionless, apparently staring after the departed intellect; and the body and limbs are entirely passive,—remaining unmoved where they are placed by others, however tiresome and uncomfortable the position. In a word, a person in catalepsy is, in

appearance, like a marble statue, or like a human body suddenly turned to stone, or, like Lot's wife, to a pillar of salt. There is as little feeling, or thought, or consciousness, as if the bowl had been instantaneously broken at the cistern, and the apparent death were real.

It is a peculiarity in this disease that the patient, on recovery from a fit, takes up the thread of conscious life just where it was broken by the attack. Thus, if she were lifting a cup of water to the mouth, she would hold it steadily, with the mouth open, till the return of consciousness, and then place it to the lips, as if no interruption had occurred; or, if conversing, and in the midst of a sentence, the unfinished words would be uttered at the end of the fit, even though it should last many days.

Persons in a cataleptic fit have much the appearance of one in the mesmeric state; and the statue-like position in which an attack fixes a patient, reminds one of the manner in which the psychologists, so called, will arrest a man under their influence, and make him immovable, with one foot raised in the act of stepping.

The disease attacks females much more often than males.

The premonitory symptoms are much like those of epilepsy, and the treatment should be about the same.

Saint Vitus's Dance. — *Chorea.*

This disease is chiefly confined to children and youth between the ages of eight and fourteen. But few cases occur after puberty.

Symptoms. — The complaint affects mostly the muscles and the limbs. It excites curious antics, — such as we should suppose would occur if a part of the muscles of voluntary motion had hatched a mimic rebellion, broken away from the control of the will, and in sheer mischief and wantonness, were tripping their fellow muscles, and playing tricks with the patient. A few of the muscles of the face or limbs begin their mischievous pranks by slight twitches, which, by degrees, become more energetic, and spread to other parts. The face is twisted into all kinds of ridiculous contortions, as if the patient were making mouths at somebody. The hands and arms do not remain in one position for a moment. In attempting to carry food to the mouth, the hand goes part way, and is jerked back, starts again, and darts to one side, then to the other, then mouthward again; and each movement is so quick, and nervous, and darting, and diddling, that ten to one the food drops into the lap. If the attempt be made to run out the tongue, it is snatched back with the quickness of a serpent's, and the jaws snap together like a fly-trap. The lower limbs are in a state of perpetual diddle; the feet shuffle with wonderful diligence upon the floor, as if inspired with a ceaseless desire to dance.

It is supposed by some that the disease consists in a partial palsy of a part of the muscles. The will in that case not being able to control the palsied muscles, when it commands the others to move, their action is not balanced, and they twitch the face and limbs into all the capricious and fantastic shapes we witness.

Others, and probably with more truth, hold that the seat of the disease is in the cerebellum or little brain. It is supposed to be one of the functions of this organ to preside over and regulate the locomotion, — that it holds the office of chief engineer, and that its duties are to keep the muscles in subjection to the will. The combined and consenting action of several muscles is needed for every movement. It is the business of the cerebellum to maintain this oneness of purpose and action — to see that no muscle flinches so as to disturb the harmony of the movement. When the cerebellum is diseased, all is confusion, — just as the locomotive runs from the track when the engineer is smitten with palsy.

The disease is not dangerous, but when it continues for many years, it is apt to weaken the mind, and it sometimes very nearly destroys it.

Causes. — Whatever excites and weakens the nervous system, as powerful emotions of the mind, overworking the mind, reading exciting novels, eating too much meat, fright, striking in of eruptions, self-pollution, etc.

Treatment. — In the first place, remove all causes of excitement. Take the patient from school, and require some sort of cheerful out-door exercise, daily. Take away all books, and be careful not to do anything to occasion anger, or fear, or any kind of injurious excitement.

In the second place, regulate the diet, — making it more animal and stimulating if it has been too low, and more vegetable and cooling if it has been too high.

In the third place, if the above changes have not been sufficient for the purpose, open and regulate the bowels with some gentle physic (30) (34) for a few days.

In the last place, build up the nervous system with oxide of zinc pills (270), three a day; or iron (73) (80), or black cohosh, scullcap, etc. (79), or the compound valerian pill (81). Sulphate of zinc (82) will sometimes succeed, when the oxide fails; and where there is scrofula, the iodide of zinc is to be used.

To these remedies should be added the shower-bath, begining with tepid water, and making it a little colder every day. If the shower-bath frightens the patient, or is not otherwise well borne, take the sponge bath.

Chronic Chorea.

This can hardly be said to amount to a disease. It consists rather in uncouth tricks, arising from some slight disorder of particular muscles, and grown into a fixed habit, such as shaking of the head every three to twenty seconds, repeated squinting of the eyes in connection with a peculiar knitting of the eyebrows, wrinkling of the nose, shrugging of the shoulders, lifting the ears up and down, or even moving the whole scalp back and forth. These movements are commonly made without a consciousness of it; and generally there

is no power to suspend them without a painful effort which cannot be easily continued.

No medical treatment is of any avail. These tricks can only be corrected by great watchfulness and effort on the part of the person suffering from them, and in many cases, not even by such means.

Cramps.

Cramp is experienced in the calves of the legs, the thighs, the stomach, the breast, the womb, etc. It is a very painful, sudden, and violent contraction of one or more muscles. The part is sometimes, as the phrase is, "drawn up into knots." When it attacks the stomach, it is a very dangerous affection. Women are subject to it about the third or fourth month of pregnancy.

Causes. — Drinking cold water when very hot and perspiring, exposure to damp night air, debility, indigestible food, and excesses in eating and drinking, and particularly overstraining the muscles.

Treatment. — Moderate the excessive labor and straining of the muscles which produce the cramps. When an attack occurs in the legs, tie a cord or handkerchief tight around the leg above the affected muscle. This will generally produce instant relief. Also rub the part with spirits of camphor, or paregoric, or laudanum.

When it occurs in the stomach, apply warm fomentations, or what is better, a mustard paste (165). Then make one grain of morphine into four pills, and give one. If this does not bring relief, repeat it in half an hour. The bowels, if confined, should be opened with an injection.

Cramps of the limbs which afflict women in the family way, can only be mitigated, not cured, till after confinement. As a palliative, high cranberry bark, scullcap, etc. (87), will be found useful.

Pain of the Nerves. — *Neuralgia.*

This disease affects one tissue only, — the *nervous;* and has one symptom, — *pain.*

In *apoplexy*, the nerves, rendered powerless and senseless by an external force, are like a man under a bank of earth which has slid down upon him. In *palsy*, they are suddenly bereft of feeling and motion by a blasting scourge within, — as one is smitten down by a pervasive charge from a magnetic battery. In *epilepsy*, the nerves are grasped and for a time held senseless by an unseen power, in which they struggle, as a man strives in the folds of the anaconda. In *catalepsy*, they are suddenly stiffened into senseless strings, for such automatic use as the bystander may, for the time, choose to make of them. In *chorea*, they are set to dancing by an invisible exhilaration, as a man is crazed by brandy.

In *neuralgia*, the nerves are neither crushed, nor collapsed, nor restrained for a time, nor stiffened, nor exhilarated. They simply have their sense of feeling intensely exalted; they are filled with *pain.*

The pain is generally of a peculiarly darting, piercing character. The patient sometimes calls it tearing pain. It comes on in sudden paroxysms, with intervals of freedom between. The attacks are sometimes like an electric shock, and are so agonizing as to bring a temporary loss of reason. Occasionally there is great tenderness of the parts affected, and some fulness of the blood-vessels in the neighborhood; but generally the signs of inflammation are all absent, excep. pain.

Neuralgic pains occur in almost every part of the system. One of the most familiar forms of the disease is known under the name of

Tic Douloureux.

It occurs in those branches of the fifth pair of nerves, which go to the face. (See Fig. 82.) Sometimes one, sometimes all of the three branches are affected, but more often, the middle branch only. When the upper branch is the seat of the disease, the pain is in the forehead, the brow, the lid, and sometimes the ball of the eye. The eye is generally closed during the pain, and the skin of the forehead is wrinkled. When the affection is in the middle nerve, the pain is preceded by a pricking sensation in the cheek, and twitching of the lower eye-lid. Soon it spreads in quick and piercing pangs over the cheek, reaching the lower eye-lid, the sides of the nostrils, and the upper-lip. If in the lower branch, it sends its lightning shafts to the chin, the gums, the tongue, and even up the cheek to the ear.

Fig. 82.

Face-Ache. — There is a species of nervous pain called *face-ache*, which does not quite amount to tic douloureux, but is nevertheless very afflictive. It occurs principally in the jaw, which seems to be filled with pain. No one spot seems to be more affected than another. From the jaw the pain often goes to the whole head, but it has not the stabbing intensity which generally characterizes neuralgia. It often proceeds from defective teeth.

Hemicrania.

This is a neuralgic pain, confined to one side of the head, — generally the brow and forehead. Sickness of the stomach often attends it, and in many cases, it is periodical, — coming on at a certain hour every day, and lasting a given time, and then passing away.

It may be caused by whatever debilitates the system, as hysterics, suckling an infant too long, or low diet. In fever and ague districts,

it is frequently produced by miasm. In many instances, the cause cannot be discovered.

Sciatica.

This is a pain beginning at the hip, and following the course of the sciatic nerve. Occasionally it is an inflammatory complaint; sometimes is connected with an affection of the kidney; but frequently it is a purely neuralgic or nervous pain; and I have therefore thought it best to place it here, with nervous diseases.

Beside the various forms of neuralgia now noticed, the disease occurs, — sometimes with great severity, — in the female breast, in the womb, in the stomach, in the bowels, in the thighs, in the knee, and even in the feet. In many of these cases, the disease is not where the pain is felt, but in the brain or spinal marrow, and consequently the true source of the complaint very often escapes detection. An excellent Episcopal clergyman in northern New York, the Rev. M. B——, with whom I studied Latin and Greek preparatory to college, had a neuralgic pain in the knee so intense, persistent and exhaustive, that the limb had to be cut off at the thigh to save his life.

Treatment. — This must be as diversified as the causes of the disease.

For tic douloureux, and some other forms, give, internally, valerianate of ammonia (88); also 89, 90, 91, 92, 93, 316.

For external use in tic douloureux, and other neuralgic affections, the prescriptions 188, 196, 197, 198.

For the face-ache, above mentioned, muriate of ammonia (134), in half dram doses, is a very valuable remedy.

When the disease is caused by miasm, and has a periodic character, like ague, it must be treated with quinine (67) (79), and if there be a low state of the blood, iron (72) (93) must be given at the same time.

The shower bath, exercise in the open air, and whatever else will build up the general health, must be used according to circumstances.

Derangement of Mind.—Insanity.

Most writers on this disease have attempted a *definition* of it. I have never seen one which suited me. Here is mine. *Insanity is a wrench of man's nature, which sets his intellectual and moral faculties awry in their relations with the external world.*

In a state of mental and moral health, he looks straight at the outward world, and sees it *as it is;* insanity gives him an angular connection with it, and he sees it *as it is not;* its objects have all changed their relative places; objects at the right in the panorama of life have moved to the centre, or gone quite over to the left; while things at the top have gone to the bottom, and those in the lowest places have taken the highest. With the thoroughly insane, *the world has gone back to chaos.*

These persons have their sensibility very much altered and perverted. Errors of the senses and illusions cheat them. In many cases, they cannot read because the letters are mingled in a confused mass. They often do not recognize their freinds, and regard them as strangers or enemies.

They become awkward in the mechanical use of their hands, and their touch loses the power to correct the errors of the other senses. Hence they are cheated in regard to the size, form, and thickness of bodies.

They are haunted, at times, with smells which have no existence, and they hear voices distinctly speaking to them from clouds, or from trees; and these voices have the familiar tones of a friend, relative, or enemy.

The insane lose the power of comparing ideas. They associate things the most unlike, and often in a ridiculous way.

They also lose the control of themselves, and come under the dominion of their passions; and then they will do acts which they themselves disapprove. One of strict integrity, of unblemished morals, and of excellent standing, becomes insane, and immediately steals what he does not want, makes infamous proposals, and indecent gestures, and is in every respect the opposite of his past self.

The insane often become averse to those who were previously among the most dear to them. For acts of kindness, they repay abuse. They fly from their best friends. This is the result of their fear and jealousy; for they are very cowardly and jealous. This alienation from friends is almost a characteristic of insanity, and is one of its saddest features. The moral affections are always disordered, perverted, or annihilated in insanity. So much is this a leading feature of the disease, that it is only when the insane begin to recover their moral affections, when they begin to wish to see their children and friends, to fold them once more in their arms, and to enter the family circle and renew its joys, that we can count upon any certain signs of a cure.

The insane have a thousand strong fancies in regard to themselves. One thinks himself inspired of God, and charged with the conversion of the world; while another, equally sincere, believes the devil has entered into him, and that the pains of hell are already taking hold of him, and he curses God, himself, and the universe. Still another is the "monarch of all he surveys," and much more; he governs the world, and directs the stars. One has all knowledge, and affects to teach the wisest. Another is proud, and withdraws from his fellows, bidding them not to come into his presence without proper acts of homage, — calling himself, it may be, a king.

There are five kinds of insanity. I will speak of each of them briefly.

Melancholy. — *Lypemania.*

This is characterized by moroseness, fear, and prolonged sadness. The melancholic person is lean and slender, with black hair, and a

pale and sallow countenance. His skin is brown or blackish, and dry and scaly. His physiognomy has a fixed appearance, the muscles of the face are drawn tight, the eyes are motionless, and directed to one point, the look is askance and suspicious, and the general expression is one of sadness, fear, and terror. He desires to pass his days in solitude and idleness. He walks as if aiming to shun some danger. His eye and ear are on the watch for evil.

These persons do not sleep much. They are kept awake by fear, jealousy, and hallucinations. If their eyes close, they see phantoms which terrify them.

Their secretions are disordered. The urine is either abundant and clear, or scanty and muddy. They sometimes retain their urine for days. One patient did not dare to make water lest he should drown the world, but was finally persuaded to it by the assurance that he would extinguish a fire which was devouring a city.

Insanity on One Subject.—*Monomania.*

This is a chronic affection of the brain, not attended by fever, and characterized by a derangement of the intellect, the affections, or the will, upon one subject only. The patient seizes upon a false principle, and draws from it injurious conclusions, which modify and change his whole life and character. In other cases the intellect is sound, but the affections and disposition being perverted, their acts are strange and inconsistent. These they attempt to justify by plausible reasoning.

Mania.

This is also a chronic affection of the brain, generally without fever. The countenance of the maniac is sometimes flushed, at other times pale. The hair is crisped; the eyes injected, shining and haggard. Maniacs dislike the light, and certain colors horrify them. Their ears are sometimes very red, and are disturbed by a tingling, and a rumbling sound. Noise excites and disturbs them. They suffer from false sensations, illusions and hallucinations; and their ideas come with great rapidity, and are confused and without order. Their affections are in a state of turmoil, and their judgments are all erroneous.

Unlike the monomaniac, their delirium extends to all subjects. Their entire intellect, affections and will, are a chaotic wreck.

Dementia.

Here is another chronic affection of the brain, without fever, in which the sensibility, the intellect, and the will, are all *weakened.* Demented persons have not the power to concentrate their minds on anything, and can form no correct notions of objects. Their ideas float after each other without connection or meaning. They speak without any consciousness of what they are saying.

Many of them have lost their memory, or, like old persons, they remember nothing recent, — forgetting in a moment what is just said or done.

The demented have neither desires nor aversions; neither hatred nor love. To those once most dear to them, they are totally indifferent. They meet friends long absent without emotion, and part from their dearest ones without a pang. The events of life passing around them, awaken in them no interest, because they can connect themselves neither with the past nor the future; they have no remembrances, nor hopes. Their brain is inactive; it furnishes no ideas, or sensations. They are no longer active, but passive beings; they *determine* nothing, but yield themselves to the will of others.

They have a pale face, a dull eye, moistened with tears, an uncertain look, and a physiognomy without expression. They sleep profoundly, and for a long time, and have a voracious appetite.

Idiocy.

Idiocy is the condition in which the intellectual faculties have never been manifested. We are not to infer disease from it, any more than we infer it in the lower animals from the absence of intellect.

In idiocy there is no mind, because the brain is not large enough to be the organ of intelligence. It always dates back, therefore, to the beginning of life. Everything about the idiot betrays a defective organization. The demented person, the monomaniac, etc., once had intelligence; the idiot, never. They, in many cases, may be cured; he is hopelessly incurable. They had blessings which have been taken from them; to him, none were ever given. They were once the pride and hope of their friends; he, from his birth, was the smitten and blasted one of his family. He never reaches an advanced age, — rarely living beyond thirty years.

These remarks are sufficient to show the difference between idiocy, and other forms of mental derangement. In the other forms of insanity there are brains enough, but they are *diseased;* in this there is no disease; the smallness of the brain is the primal and fatal defect.

This form of mental derangement is caused by a defective development of the brain. That the other forms are produced by *disease* of the brain, there can be no doubt.

Some have supposed insanity to be a *mental* disorder merely, having nothing to do with the body. They might as well suppose the delirium of fever to be a disease of the mind only.

Insanity is an unsoundness of the brain and nerves which proceed from it, in every instance. At first it is probably only excitement of the brain; but this, long continued, becomes a chronic inflammation. The brain and nerves of an insane person are undoubtedly sore, and hence the painful thoughts and feelings which afflict them. When the soreness is much increased, they are violent and furious; when it subsides, they are calm. In consequence of this inflammation and soreness of the brain, an insane person can no more think, or reason, or will, or feel correctly, than a person with an inflamed

stomach can digest food well, or than one with inflamed eyes can see well.

Causes of Insanity. — Hereditary predisposition; painful subjects of thought or feeling long revolved in the mind; injured feelings which cannot be resented, mortified pride, perplexity in business; disappointed affection or ambition; great political, religious, or social excitements; sudden and heavy strokes of misfortune in the loss of property and friends; and in general, whatever worries the mind for a long time, and creates a deep distress, may be a cause of insanity.

But one of the most prolific causes, and worthy of special mention, is masturbation, or self-pollution, — a vice contracted by thousands of young people, both male and female.

Beside the above, I may mention several physical causes, as convulsions of the mother during gestation, epilepsy, monthly disorders of women, blows upon the head, fevers, loss of sleep, syphilis, excessive use of mercury, worms in the bowels, and apoplexy.

Chances of Cure. — Idiotism is never cured.

Melancholy and monomania are cured when recent, and do not depend upon organic disease.

Dementia is sometimes, though seldom, cured.

Chronic insanity, of long standing, is not easily cured.

Insanity which has been produced by moral causes, acting suddenly, are generally curable; if the causes have acted slowly and long, the cure is more doubtful.

Excessive study causes insanity which is hard to cure.

If caused or continued by religious ideas, or by pride, it is not often cured.

Insanity caused and maintained by masturbation, is cured with great difficulty.

Treatment. — The treatment of the insane is now almost confined, as it should be, to public hospitals. In these institutions, all the means are provided which humanity has been able to devise, to lift from these unfortunate beings the terrible shadow which is upon them. Here they have safety, comfort, recreation, friendly guardians, rest, and medicine.

They have safety from the annoyances which well-meaning but mistaken friends at home almost always commit in contradicting, and reasoning with, persuading, and threatening them; for only in these humane institutions has it been well learned that to do so is no wiser than to persuade, scold, or threaten a neuralgic pain in the face, an inflammation in the stomach, or a felon upon the finger. They are safe, too, from the impertinent scrutiny of neighbors, the hootings of unthinking boys in the streets, and especially from the causes, whatever they are, which have produced the disease. And so far, this is just the treatment they want, — no contradiction, no impertinent scrutiny from neighbors, no abuse in the streets, and a withdrawal of the causes which have produced the disease.

In these institutions, too, they have comforts. They have clean

rooms, galleries, lodges, bathing-rooms, yards and gardens for exercise and walking, safe, quiet, well-aired bed-rooms, and clean and comfortable beds; cheerful dining rooms, and plain, wholesome, and nutritious food. And this, likewise, is the treatment they require.

They have recreation, — dances, cards, back-gammon, chequers, chess, billiards, nine-pins, walking parties, riding parties, gardening, and an indulgence in those arts of painting, music, drawing, and architecture, for which they may have a taste. And such recreations are powerful instruments in the cure of all disorders of the nervous system.

Here, too, they have friendly guardians, who have long studied their complaints, and have imbued their souls with a sympathy which goes down into the depths of their sufferings, and allies itself with all their sorrows; — men and women who are willing to act the part of guardian angels; to be their friends; who know how to gain their confidence; and who use the influence acquired by love, in leading them back towards health and happiness. And this, too, in curing the insane, is of great consequence, for none can do them good till they have their confidence, and this can be gained only by love and wisdom.

In these insane asylums, they find *rest*. When the brain is hot from inflammation, and they are raving from delirium, they are here withdrawn from the noisy crowd, and shielded from the rude shocks of the world. If need be, they are placed in solitary rooms, where silence spreads its soothing stillness through their excited brains. And it is of the greatest importance that the sore and torn feelings should rest; for rest allays excitement, and brings sleep; and without a proper amount of sleep, recovery is not possible.

Finally, in these institutions, they receive the best *medical* treatment. They have warm and cold bathing, judiciously administered; they have simple cathartics when the bowels are bound, as salts, castor oil, and magnesia; tonics for debility, such as quinine, iron, quassia, columbo, and chamomile; and quieting medicines for their excitement, such as opium, morphine, cicuta, hyoscyamus, belladonna, stramonum, scullcap, and valerian. Prescription 74 is a combination much used. Here, too, broth, gruel, and milk, are administered by the forcing pump to such as take a fancy not to eat, — an expedient which has saved many lives. Fruits of all kinds, as strawberries, cherries, currants, plums, apples, peaches, and grapes, are allowed freely. Cold water, sweetened or otherwise, is the drink. To these things are added lively conversation, and whatever will divert the mind from reflection, and internal imaginings and revery.

Thus I have indicated, very briefly, the treatment which the insane receive in public institutions. That the chances of recovery in these humane retreats is much greater than at home, does not admit of a doubt. When it is not convenient to send an insane person to a hospital, the treatment should be as near like the one here sketched as circumstances will permit.

Hypochondria.

The common names of this disease are *low spirits*, *spleen*, *vapors*, *hypo*, and *the blues*. It produces constant fear, anxiety, and gloom. Business, pleasures, the acquisition of knowledge, and all the useful pursuits of life, become insipid, tasteless, and even irksome to the hypochondriac. His mind is full of the belief that something dreadful is about to befall him. He is either going to be sick, or to die, or lose his property or friends. He has no mind to engage in any business, nor does he wish to go anywhere, or to see anybody. Night and day his spirits are down to zero, and his heart has a load too heavy to bear. He is wholly occupied with his troubles, and his feelings. He thinks he has various diseases, and wears out his friends by talking of his sufferings. He feels of his pulse often, looks at his tongue in the glass, and several times a day asks a friend if he does not look pale or sick.

The external senses manifest symptoms of derangement as well as the thoughts, feelings, emotions, and passions. There are roarings in the ears, like a waterfall, or the noise of a distant carriage. Floating black specks, or bright sparks, are seen before the eyes. These indicate a slight fulness of the blood vessels, and perhaps, in some instances, sparks of electricity passing to or from the eye, and are in no proper sense subjects for the alarm they cause. At one time the person will feel as large as a barrel, at other times not larger than a whip-stock; the head will feel light or heavy, large or small. The skin will twitch in different parts, or feel numb, or have the sensation of spiders crawling on it. The smell and taste become perverted; the hypochondriac will smell odors and flavors, at times, where there are none.

These errors of the senses are all owing to some slight disorder of the organs of sense; and they are no more wonderful than that the mind should perceive personal danger, poverty, and death itself, when none of these things are impending.

These persons are subject to fainting turns, when the breathing will appear to stop, the body become cold, the face pale; there will be distress in the region of the heart, which will apparently stop beating, and the person will feel as if dying. At the same time the mind will remain clear. These nervous spells are alarming, but pass off without danger.

These persons become changed in their moral dispositions. They are jealous, take a joke as an affront, and feel the greatest distress at any apparent lack of attention or neglect on the part of friends. They put the worst construction upon the actions of friends. They are irritable, fretful, peevish, and fickle.

The complaint is distressing, but does not appear to shorten human life.

The seat of the disease is in the brain and nerves. It is caused by anxiety, care, disappointment, working the brain too hard, diseases of

the liver and stomach, costiveness, sedentary habits, excessive venereal indulgence, and masturbation.

Treatment. — This disease is more easily prevented than cured. It would be almost entirely prevented in this country if in childhood we were all taught to be contented with humble competence, to love active labor, and to think it honorable, instead of struggling after wealth, and falling into unhappiness when it does not come.

Remedies. — Of all the remedies for this complaint, that which is most important is active employment out of doors. The human body was made for motion. Without it the blood cannot be distributed to the several organs. The senses, — the eye, the ear, the touch, — should be much in communion with nature. In this way they are strengthened. Nature is their great physician. Man is a creature of sensation; and if too much occupied with feelings, thoughts, and deep reflections, the nerves will be irritated, and begin to give deceptive sensations. A very nervous man should fly to some active occupation, if he would be rid of suffering.

The open, fresh air is very important to restore the system to soundness.

Temperance, both in eating and drinking, will do much for this class of patients, yet they are the very persons who eat largely, and they often fly to the excessive use of stimulants to drive away their sorrow. By so doing, they aggravate the disease.

Amusements are very important for hypochondriacs. Lively company, cheerful and witty conversation, with mirth and laughter, lively songs and instrumental music, are all desirable; and so are gunning, fishing, riding, billiard-playing, and travelling.

Never allow these patients to be alone, and to have time to brood over their misery. See that they go early to bed, and rise betimes in the morning. The warm bath, the cold shower, or sponge bath, with brisk friction, are not on any account to be omitted. The diet should be light, nutritious, and generous; but fats, acids, liquors, and coffee, must be forbidden.

But little medicine will be required. If there be costiveness, let the cracked wheat be eaten; if this do not answer, a little rhubarb and bicarbonate of potassa (35), or leptandrin, podophyllin, etc. (36), may be given as required by the symptoms. A teaspoonful of calcined magnesia once a day, or the infusion of thoroughwort, drank cold, will often answer an excellent purpose. A bowl of warm motherwort tea, with a teaspoonful of spirits of camphor in it, will do well in fits of fainting when there is a sensation of dying. A teaspoonful of sulphuric ether may be given at the same time. If there be debility, tonics are sometimes useful (50) (49) (54) (55).

Hiccough. — *Singultus.*

This is a sudden, jerking spasm of the midriff, occurring every few moments in bad cases, causing the air to be driven out of the lungs

with such suddenness as to produce a noise something like the involuntary yelp of a puppy. It is generally caused by acidity of the stomach, which irritates the nerves distributed to its neighborhood, and is not difficult to remove; but when it occurs towards the close of some acute and grave disease, it is sometimes a sign that dissolution is at hand.

Treatment. — Startle the person suffering, by exciting surprise, or fear, or anger; or, let a few small draughts of cold water be taken in quick succession; or, let the breath be held as long as possible. If the stomach is sour, take a teaspoonful of bicarbonate of soda, dissolved in half a tumblerful of cold water. To expel wind from the stomach, if it be present, take some warm aromatic-essence of peppermint, ether, or compound spirits of lavender. But one of the most effectual remedies, is *heavy pressure made upon the collar bones.* It is simple, and very effectual.

Fainting. — *Syncope.*

Fainting is preceded by a distress about the heart, a swimming of the head, sometimes sickness at the stomach, coldness of the hands and feet, and a loss of sight, or *a sense of things growing dark.* The breathing diminishes, the pulse becomes small, the face deadly pale, and the patient wilts down, and becomes more or less unconscious of what is passing around.

Whatever causes debility, particularly of the nervous system, will predispose to fainting. Persons much weakened by disease, faint easily, — especially when they attempt to stand still. When on their feet, such persons should keep moving. Fainting is sometimes induced by sudden surprizes and emotions, by violent pains, by the sight of human blood, and by irritation of the coats of the stomach by indigestible food.

Treatment. — Lay the patient upon the back, with the head low; let fresh air into the room instantly, and apply gentle friction. Sprinkle a little cold water upon the face, and hold spirits of camphor, ether, hartshorn, or vinegar to the nose, — rubbing a little of the spirits of camphor upon the forehead, and about the nostrils. As soon as the patient can swallow, give a teaspoonful of compound spirits of lavender, with ten drops of water of ammonia in it.

Persons subject to fainting should not go into crowded assemblies where the air is bad; neither should they wear tight dresses, or allow themselves to get excited. Cold bathing, a well-regulated diet, and vegetable tonics, will do much to break up the habit.

Dizziness of the Head. — *Vertigo.*

This affection makes objects which are stationary appear as if moving, or, as the phrase is, "turning round." When seized with it, one will have a sensation as if falling, and objects about him will seem to be in motion.

It is caused by irritation of the nerves of the stomach in dyspepsia, by long application of the mind, by a weakened nervous system, by hysterics, and by a fulness of the blood-vessels of the head. When it proceeds from most of these causes, it is not dangerous; but when caused by impending apoplexy, it is a symptom of very serious import.

Treatment. — Find out the cause and remove that, and the dizziness will disappear. If it come from dyspepsia, eat lightly; if from costiveness, open the bowels either by coarse food, by daily cold water injections, or by some gentle physic. Avoid coffee, ardent spirits, and late suppers, and take much exercise. Keep the feet warm, and the head cool.

Disturbed Sleep.—Nightmare.—*Incubus.*

In this complaint the sleep is disturbed generally by some frightful image. Whatever of an alarming character is presented to the mind in sleep, causes fear, or some other painful emotion, the same as when awake. And when the attempt is made to resist, or to flee from the danger, it is ineffectual, because the muscles are locked fast in sleep. The fear being increased by the inability to escape, the sleeper makes all sorts of horrible noises, indicating distress of mind. The danger seen is as real to the sleeper as if he were awake, and he tries to do just what he would if awake. Sometimes the sensation is that some heavy weight, or perhaps some horrible monster, is upon the breast, nearly pressing the breath out of the body.

At times, the power of motion is not absent, and then disturbed dreams may cause one to talk, or to rise and walk, or run. Children will laugh, or cry, or scream, which shows that their minds are agitated by different passions. Persons who idulge gloomy and troublous thoughts in their waking hours, are apt to be disturbed with sleep-walking, sleep-talking, and frightful dreams, as of falling down precipices, during the hours for repose.

There is nothing very wonderful about these disturbances of sleep. It is only necessary that there should be an unusual sensitiveness of the brain, or that a hearty supper, eaten late, should irritate the nerves of the stomach, and that distressing thoughts should be dwelt upon during the day and evening, in order to produce all the walking, talking, dreaming of hobgoblins, shipwrecks, fires, and polar bears, which distress so many unfortunate sleepers.

In night-walking there is simply a little more wakefulness than in night-talking, and in this latter, more than when one falls from a high place, and in this perhaps slightly more than in real *incubus*, when one is in the greatest peril, but cannot move at all.

Treatment. — When sleeping persons groan, or make any noise indicating nightmare, *shake them*, and they will come out of it at once. As these troubles are often caused by a weakened state of the nerves, much out-door exercise should be taken. The diet should be simple, and well regulated. The suppers should be light, and

never taken late. The evening should be spent in some pleasant amusement, which will drive away care; and the last hours of wakefulness be occupied with pleasant reflections. One afflicted with nightmare should not lie upon the back, nor with the hands over the head. Acidity of the stomach, and costiveness, if they exist, should be removed by the neutralizing mixture.

Headaches.

These are not always caused by disorders of the brain and nerves, but they frequently are, and this seems the proper place to speak of them.

It is unwise ever to neglect headaches. They are sources of great suffering, and often lead to serious derangements of the health In childhood they have a more serious meaning than in adult life. They often indicate the approach of scarlet fever, or measles, or of other diseases.

Headaches are more common among the civilized than the uncivilized; more frequent among females than among males; among those of sensitive feeling than among the more obtuse; among those who think much than among those who think little; among the sedentary than among the active.

Causes of Headaches. — They are dependent on various causes, as derangement of the circulating system, of the digestive organs, of the nervous system, etc. Among those dependent on disturbance of the circulation, are

Plethoric Headaches. — These are dependent on a general fulness of blood They are of two kinds. One is occasional, and lasts but a few hours. The other lasts for days or weeks. It occurs most often in the night or morning. Persons whose occupations require stooping have it most. A little dizziness is generally felt on rising up from a stooping posture. It is brought on by the bad air of crowded rooms, and is attended by costive bowels, short breath, and a white furred tongue.

The persistent headache is accompanied by a sense of fulness, and sometimes of throbbing over the brows and temples, with a sensation of dizziness, and of mist before the eyes. The sufferer fears exertion, and is constantly looking for a rush of blood to the head. Nature sometimes relieves this form of headache by a diarrhœa, or by bleeding from the nose.

There is another form of plethoric headache, differing slightly from the above, in which there is too much blood, and it is made too fast, but it does not circulate so rapidly. The muscles are not very firm, and the heart does not propel the blood with much force. This form of headache is connected with *congestion.*

Headaches of Indigestion. — These are caused either by taking improper articles of food, or by eating too much of those which are proper. The sensation in the head is not always a pain, but some-

times only a dull weight, attended by languor and disinclination for exertion; a tongue white in the centre, and pale red at the tip and edges; cold and numb fingers; slight nausea; languid and feeble pulse; dim and indistinct sight; eyes aching when employed; and difficulty in fixing the attention.

Sick Headache. — This has received its name from the constant nausea or sickness at the stomach which attends the pain in the head.

This headache is apt to begin in the morning, on waking from a deep sleep, or after sleeping in a close room, and when some irregularity of diet has been committed on the day before, or for several previous days. At first there is a distressingly oppressive feeling in the head, which gradually merges into a severe, heavy pain in the temples, frequently attended by a sense of fulness and tenderness in one eye, and extending across the forehead. There is a clammy, unpleasant taste in the mouth, an offensive breath, and the tongue covered with a yellowish-white fur. The sufferer desires to be alone, and in the dark. The hands and feet are cold and moist, and the pulse feeble.

Accompanying these symptoms, there is a depressing sickness at the stomach, which is increased by sitting up, or moving about. After a time, vomiting comes, and relief is obtained.

Bilious Headache. — This is most common in summer and autumn. It afflicts persons of dark complexion, with black hair and melancholy dispositions. There are two kinds; one is due to an accumulation of bile in the system; the other to a large secretion of bile.

In the first variety the skin is dingy and sallow, the spirits depressed, the bowels costive, and there is wind in the stomach, with a dull, aching pain on the right shoulder. The pain is in the forehead, eyebrows, and eyelids, and the "white of the eye" is a little yellowish. The tongue has a brown fur, and is cracked in the centre. There is a bitter taste in the mouth on waking in the morning, after restless nights, and frightful dreams.

In the second variety, which is due to an "overflow of bile," the symptoms are much like those of the first kind, but the pain is not so continuous. In addition to the symptoms named, there is a throbbing, rending pain in the head, the skin is hot and the face flushed, the limbs are sore, and there is a luminous halo or ring around objects looked at, and a feeling of giddiness.

Nervous Headaches. — These are more common among females than males. They occur most frequently among persons of high susceptibility, who are easily elevated, and as easily depressed. They are often connected with indigestion.

The pain is usually acute and darting, and is made worse by light, with a feeling as if the temples were being "pressed together," and a "swimminess" in the head. There is sometimes a sense of sinking, with a dread of falling, and great despondency and restlessness. The bowels are generally costive, and the sight dim. The pain comes

on most commonly in the morning, lasts through the day, and abates in the evening.

Hysteric Headache. — There is a nervous headache dependent on the *hysterical* condition. It is generally confined to one small spot, frequently over the eyebrow, and is sometimes compared to a wedge or nail driven into the skull.

Headache from Exhaustion. — Still another species of nervous headache arises from extreme exhaustion, produced by great loss of blood, by diarrhœa, or by over-suckling. The pain is generally on the top of the skull, and is often compared to the beating of a small hammer on the head.

Brow Ague. — This is intermittent in its character, and is brought on by exposure to cold and moisture in damp and marshy districts; and in this respect is much like ague.

Megrims. — This is most frequent among females. It is often dependent on the same causes as Brow Ague, and is also produced by long and exhausting watching over sick children, distress of mind, and indigestion.

In both the above forms, the pain is intermittent, seldom lasting long, but being of a sharp, piercing character, like that of tic douloureux. The pain of Megrims, usually begins at the inner angle of the eye, and extends towards the nose; the parts being red and sore, and the eye-ball tender. In Brow Ague, pain and great tenderness cover an entire half of the head, compared by the patient, sometimes, to "an opening and shutting of the skull." It begins with a creeping sensation over the scalp.

Rheumatic Headaches. — These generally affect persons who have been subject to rheumatism, and are often brought on by uncovering the head when sweating. The pain is usually in the brow, the temples, or the back of the head, and is dull and aching, — rather an intense soreness than a real pain; and the painful part is excessively tender upon pressure. The skin is moist, but not hotter than natural.

Treatment. — In considering the treatment, I will take up the same order in which I have spoken of the different forms of headache.

Plethoric Headaches. — Not much medicine should be taken for these, if it can be avoided. A diuretic (131) may be taken twice a day, and an occasional dose of gentle physic at night, followed by (7) in the morning. This will generally give great relief.

Meat should be taken but once a day, and the whole diet should be spare, the appetite never being fully satisfied. All spirituous drinks, including distilled and fermented, should be let alone, and coffee likewise.

Much exercise should be taken in the open air. The hair should be kept short, and the head elevated during sleep. Bleeding at the nose, when it occurs, must not be too suddenly stopped.

Congestive Headaches. — The exercise, diet, mode of sleeping, etc., should be the same as in plethoric headaches. In this complaint, there is too much blood in the head, and it inclines to stagnate. The feet and hands are cold; and gloves and stockings of wool, and other bad conductors of heat from the body, must be worn.

Occasionally a little gentle physic (319) is desirable to induce the bowels to act every day. If there is great debility, iron (71) (74) (75) (320) will be required.

Headache of Indigestion. — If the pain come immediately after a meal, and can be traced to something eaten, an emetic (2) may be taken, if the person be tolerably strong. If the pain come on some hours after eating, take rhubarb and magnesia (28) (14), or fluid magnesia. When the system is debilitated, take a warm draught (322) in the morning after a light breakfast, or twice a day, a bitter with an alkali (323). If the stomach be very irritable, bismuth, at meal times (324) (326). When it occurs after a debauch, take recipe 325.

Sick Headache. — When it results from food taken, a draught of warm chamomile tea, or a little weak brandy-and-water, will generally give relief. If the sickness continue, soda and water, with a little ginger may do well, or a mustard poultice upon the stomach (165) may be required. As soon as it can be kept on the stomach, a dose of physic (326) must be taken; and if relief does not come after the operation of this, give a bitter and an aromatic (327). The patient must have perfect rest. If there be great lack of tone in the system, the mineral acids (328) (329) will be excellent.

The diet must be carefully regulated, as in plethoric and congestive headaches.

Bilious Headaches. — These are generally connected, more or less, with some affection of the liver.

During an attack, if the suffering be great, attended by nausea, give an emetic (2). In milder cases, give recipe (321). If there be costiveness, give recipe (330) at night, and (7) in the morning.

A few doses of podophyllin, leptandrin, etc. (34) (36) (39), to relieve the liver when the bile does not flow fast enough, will diminish the frequency and force of the attack. The fluid extract of dandelion, taken for some time, often does good service.

The diet should be light, and chiefly vegetable, and exercise in the open air must not be omitted. The daily sponge bath, with friction, is excellent.

Nervous Headaches. — The first thing to be done is to relieve the pain, and this may generally be accomplished either by preparation (331), or (332), or (333), or (88), or (93), or two or three drops of tincture of nux vomica in a spoonful of water, taken three times a day.

In simple nervous headache, *diet* is of the greatest importance; in hysterical cases, *exercise;* in headaches from exhaustion, tonics (81) (79) (63) (73) (64) (61) (60).

Rheumatic Headaches. — Take a light diet, with but little animal food. Wear warm clothing, and avoid exposure to wet feet and dampness generally, and go to a mild climate, if convenient.

When the local pain is great, apply hot fomentations, or a stimulating liniment (334), or a mustard poultice, to the back of the neck. In the beginning of the treatment, a little physic at night (335) is useful.

Before closing this chapter on headaches, let me enter a respectful protest against the indiscriminate use of the thousand and one remedies advertised to cure headaches; for in a great majority of cases it is merely a symptom of some other disease; instance: Indigestion, Fever, Bright's Disease, Softening of the Brain, Diseased Liver, etc.; and the use of these remedies serves rather to increase than lessen the difficulty.

DISEASES OF THE THROAT.

The diseases which seat themselves in the throat, and in the great cavity of the chest, have occupied a large share of my attention for the last ten years. My practice in these complaints has been large,— being drawn from every part of the United States, and the British Provinces. No class of diseases from which men suffer are more numerous than these, and none have so generally baffled the skill of the profession. For this reason, I wish to present here a brief, practical, and common-sense view of these complaints, which shall be of real value to the thousands of families, who, I trust, will consult these pages.

Increase of Throat Diseases. — A striking increase in the number of throat diseases has been witnessed within the last few years. A person suffering from any of them will find, on speaking of his complaint, that a number of his neighbors are afflicted with troubles of a similar kind. I have thought that in some of their forms these diseases have fastened upon the throats of not less than half our population. And when it is considered that they are the natural, and if unmolested, the certain harbingers of lung disease, it is wise to make a note of the above fact. As I shall describe them in the nasal cavities, the pharynx, the fauces, etc., they all have a natural proclivity downwards. From these upper cavities they pass, by one short step, into the larynx, — the cavity where the voice is formed, — and then, by another equally short and easy stage, into the body of the windpipe. It is a singular fact that their progress is always from the upper breathing passages downward, and never from the lower passages upward. They afford a parallel to the order of progression in the moral world, in which evil tendencies are toward a lower depth.

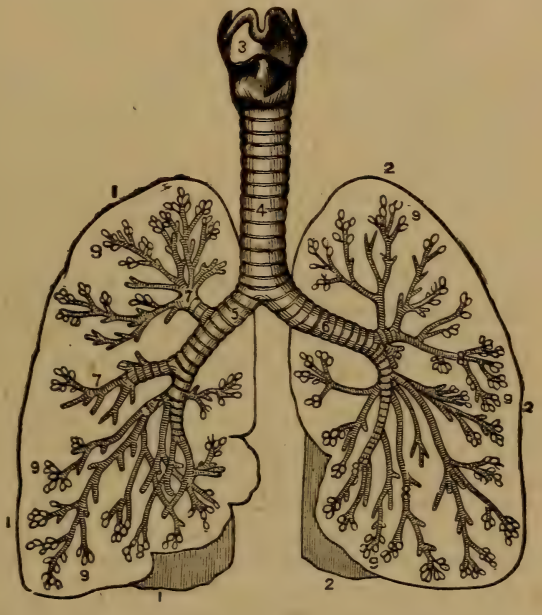
A Mistake Corrected. — Before describing the several diseases which belong to this family, I wish to correct the mistake which so generally classes them all under the term Bronchitis.

They all consist in a simple inflammation, acute or chronic, either of the mucous membrane lining the several cavities to be spoken of, or of the small glands or follicles connected with that membrane; and each disease takes its name from its particular location. Thus, the inflammation of the membrane lining the upper part of the throat, or pharynx, is called *Pharyngitis*. Inflammation in the top of the wind-

pipe, or larynx, is *Laryngitis*. In the windpipe, or trachea, it is *Trachitis*. In the bronchial tubes, it is *Bronchitis*. As the bronchial tubes exist nowhere except in the lungs, below the division of the windpipe, there can be no Bronchitis in the throat. Nevertheless, it is the same disease with Laryngitis and Pharyngitis, and differs from them only in being in a more dangerous place.

As the windpipe descends into the chest, it divides below the top of the breast bone into two branches, one going into the right, the other into the left lung. These branches divide and subdivide very minutely, and send their ramifications into every part of the pulmonary tissue. Thus situated, Meckel has compared the windpipe to a

FIG. 83.



hollow tree with the top turned downward, — the larynx and trachea representing the trunk, and the bronchial tubes, with their innumerable subdivisions, the branches and twigs. (Fig. 82.)

If the reader will now understand that the trunk and branches of this bronchial tree are hollow throughout, and lined with a delicate and smooth mucous membrane, and that the diseases to be described are inflammations either upon this membrane or the small glands connected with it, causing swelling, redness, unhealthy discharges, roughness, etc., he will have a good general idea of them.

Nasal Catarrh.

I TAKE these diseases in the order of their location. Nasal Catarrh consists in inflammation, which begins behind and a little above the veil of the palate, and extends upward from thence into the nose. It

is an exceedingly troublesome complaint, and afflicts great numbers. It passes under the name of Catarrh in the Head.

The inflammation is not confined to the nasal cavities. It extends frequently to the air cavities, called *antrums* and *sinuses*, which cover a considerable portion of the face, and extend to the lower part of the forehead. Persons sometimes feel as if their whole face were involved in the disease, and were almost in a state of rottenness, — so great is the amount of matter discharged from the head. Such free discharges cannot be wondered at when we reflect that all the air cavities in the face are lined with the same mucous membrane which lines the nose, and that they all communicate with the nasal cavities.

The "horn ail," among cattle, is a similar inflammation of the inner surface of horns; and the "horse distemper" is an inflammation of the air cavities in the head of the horse, and is much the same disease with our catarrh in the head.

The catarrh often creates a *perpetual desire to swallow*, and gives the feeling, as patients express it, "*as if something were sticking in the upper part of the throat.*"

When the inflammation has existed a long time, and ulceration has taken place, puriform matter is secreted, and drops down into the throat, much to the discomfort of the patient. Indeed, this is one of the most distressing features of the complaint, as this matter often descends into the stomach in large quantities, causing frequent vomiting, and a general derangement of the health. Many times the sufferer can only breathe with the mouth open. Upon rising in the morning a great effort is required to clear the head and the extreme upper part of the throat. There is occasionally a feeling of pressure and tightness across the upper part of the nose; and the base of the brain sometimes suffers in such a way as to induce headache, vertigo, and confusion. The smell is frequently destroyed, and sometimes the taste. The inflammation sometimes gets into the eustachian tubes, the mouths of which are behind and a little above the veil of the palate, and extends up the lining membrane to the drum of the ear, causing pain or deafness, and occasionally both. In addition to this catalogue of evils, there is often added inflammation and elongation of the uvula or soft palate.

Treatment. — The following is a fair illustration of my mode of treatment:

On the 12th of December, 1852, Mr. ——, of this city, came under treatment for a bad case of catarrh in the head, complicated with follicular disease of the pharynx, or upper part of the throat. In addition to nearly all the symptoms mentioned above, he had a stench from the nose exceedingly offensive to all about him. So much had the disease worn upon him that he had become bilious, sallow, dejected, and low in strength and flesh. When it is said that to all this were added a cough and loss of appetite, with insidious approaches of hectic, it will not be surprising that his friends saw the most serious results impending, even though assured by me that the disease had not yet taken firm hold of his lungs. The first thing

done for him was to cut off the uvula. Five days after, I began to bathe the whole nasal cavity, three times a week, with a shower syringe, by pushing the smooth bulb up behind the veil of the palate, and throwing instantaneously a most delicate shower of medicated fluid up both sides of the septum. The upper part of the throat was likewise bathed by the use of a shower syringe made expressly for that part, and the larynx, or place where the voice is formed, by a long, bent instrument made to reach this part of the throat. The solution used consisted of half a dram of crystals of nitrate of silver dissolved in one ounce of soft water.

The nitrate of silver powder was inhaled once a day with the powder inhaler. In this way the nasal cavities and throat were kept cleansed, and the articles used gradually subdued the inflammation, setting up a new and healthful action in place of the diseased one. The stomach was relieved of the offensive matter which had daily and nightly gone down into it, and the system of the poisonous effects of its absorption. The great danger which threatened the lungs, and which would soon have been realized in their destruction, passed away. The skin gradually assumed its proper color; the appetite, flesh, spirits, and strength came back, and Mr. B. has been since in the enjoyment of good health, pursuing his business cheerfully.

When the above treatment fails, as it does occasionally, I am in the habit of changing the solution, using, sometimes, a weak solution of acid nitrate of mercury, twenty drops to an ounce of water. In other cases, a solution of sulphate of zinc serves a good purpose. A dilution of the tincture of arnica flowers is a preparation of some value in these cases. There are other preparations, too numerous to mention, which I am in the habit of using. I will add, that the nitrate of silver powder, snuffed once a day, a pinch at a time, is far more successful than any other *snuff* ever made.

Inflammation of the Pharynx.—*Pharyngitis.*

This is an inflammation of the upper and back part of the throat, or all that part which can be *seen* when the mouth is stretched open. It causes a redness of the mucous membrane lining the part, which is deep in proportion to the intensity of the inflammation. This complaint is generally connected with the one I am about to describe; and since the treatment is the same, the reader is referred to what next follows.

Clergymen's Sore Throat.—*Follicular Pharyngitis.*

This disorder made its appearance in this country in 1830, and the attention of the profession was first drawn to it, *as a distinct disease*, in 1832. Some have supposed its origin to have had a hidden connection with the epidemic influenza, which spread over the civilized world in 1830, and affected all classes of persons; but this is only conjecture. In its early developments it attracted notice chiefly by its visitations upon the throats of the clergy. Hence its popular

name of *Clergymen's Sore Throat.* It was soon found, however, to attack all classes of persons indiscriminately, whether engaged in any calling which required a public exercise of the voice or otherwise. It was noticed more by public speakers and singers, on account of the greater inconvenience it gave them.

The disease consists in a chronic inflammation of the mucous follicles, or glands connected with the mucous membrane which lines the throat and windpipe. The office of these little glands is to secrete a fluid to lubricate the air passages. When inflamed, they spread an acrid, irritating fluid over surrounding parts, which excites inflammation in them. Hence a general inflammation of the upper part of the throat, or pharyngitis, usually attends the follicular disease, and I shall speak of the two together. This inflammation of the glands and the membrane, being neglected, as it generally is, lingers on from month to month, or from year to year, making in some cases slow progress, in others more rapid, — made a little worse and its step slightly quickened by every fresh cold, and finally results in ulceration. The expectoration thenceforward becomes puriform, and finally undistinguishable from that of consumption, with all the symptoms of which the patient finally dies. Indeed, before its nature was understood by the profession, it was considered the most fatal form of consumption, because it could be affected only in a very small degree, if at all, by medicines taken into the general system.

Inflammation of Mucous Membrane and Glands of Larynx.

Follicular Laryngitis.

A FEW strong and beautifully formed cartilages unite to form a curious and convenient box or cavity at the top of the windpipe, called the larynx. Across this enclosure are stretched two remarkable cords, called the vocal ligaments. They are from half to three quarters of an inch in length, and are rendered more or less tense by the small muscles with which they are connected. Just above these cords are two cavities, which, with the ligaments, act an important part in the formation of the voice. Here is produced the *sound*, which is modified and *articulated* by the tongue, the lips, and the nasal cavities.

When disease reaches this cavity, and the fluid secreted to lubricate these cords becomes acrid, the voice, from this and other causes, is made hoarse; and when, at length, these ligaments are altered in structure by inflammation and ulceration, the voice suffers a gradual extinction. I have treated a large number suffering entire loss of voice, and am happy to say it has been generally restored, where the lungs have not been involved in the disease. There is often also a little sensitiveness, or even soreness, in some cases, in the region of the larynx, which may be felt by pressing upon that prominence in front of the throat, called Adam's apple.

Inflammation in the Windpipe. — *Tracheitis.*

This complaint and the one preceding it differ only in their locality from those described in the upper cavities; and they are more alarming, because two removes nearer the citadel of life. Happily, we know that the seat of these diseases may be easily reached, and we have a shower syringe, constructed by me in 1849, so arranged as to pour the remedial agent directly upon them, without any lacerating disturbance of the parts.

Symptoms. — The approach of these disorders is often so insidious as hardly to attract notice, — sometimes for months, or even years, giving no other evidence of their presence than the annoyance of something in the throat to be swallowed or hawked up, — an increased secretion of mucus, and a sense of wearisomeness and loss of power in the throat, after public speaking, singing, or reading aloud. At length, upon the taking of a severe cold, the prevalence of an epidemic influenza, or of an unexplained tendency of disease to the air passages and lungs, the throat of the patient suddenly becomes sore, its secretions are increased and rendered more viscid, the voice grows hoarse, the difficulty of speaking is aggravated, and what was only an annoyance, becomes an affliction, and a source of alarm and danger. These diseases clearly belong to the family of consumption, and need early attention.

Causes. — It is amusing to reflect upon the theories which writers were in the habit of constructing, a few years since, to account for the throat affection among the clergy. It was attributed by some to speaking too often, by others to speaking too loud. One class of writers thought it arose from high, stiff neck-stocks; another, from a strain of voice on the Sabbath to which it was not accustomed on other days.

The cause lies deeper than any of these trifling things. As it concerns ministers, it may generally be expressed in two words, — labor, anxiety.

The clerical order are placed just where they feel the force of the high-pressure movements of the age. They are the only class of recognized *instructors* of adult men, and are obliged to make great exertions to meet the wants of their position. The extremely trying circumstances in which they are often placed, too, in these exciting times, by questions which arise and threaten to rupture and destroy their parishes, weigh heavily upon their spirits, and greatly depress the vital powers. And when we add to this the fickle state of the public mind, and the shifting, fugitive character of a clergyman's dwelling place, and the consequent liability to poverty and want to which himself and family are exposed, we have a list of depressing causes powerfully predisposing to any form of disease which may prevail.

It will be pardoned me, I think, if I suggest here, that the nature of a clergyman's calling is of so serious a character, that he some-

times carries himself with too much sedateness, keeps himself too much braced up, and does not allow himself hours enough of that cheerful, light-hearted abandon, which is essential to the health of every sedentary man of mental habits. The hard-thinking and hard-working minister, who will retain his health, and save his throat, must have *some* moments, at least, when the weighty responsibilities of his office are lifted up from his soul, and he becomes, for the hour, the jocund, playful boy of earlier days. How *far* he can consistently relax and let himself down, or in my view of the matter, *raise himself up* to the simplicity and mirth of childhood, he alone can be the judge. As a physician, I prescribe; as a minister, he must decide how far my prescription can be followed.

Reading Sermons. — There is one practice, which, though it has not much to do with *inducing* this disease, does frequently aggravate it when once e tablished; I mean the habit of reading sermons from manuscripts, — especially when it is done in a sort of mechanical way. Every person who has suffered from throat ail, has doubtless noticed that to read aloud, for half an hour, from a book, occasions more fatigue and irritation in the throat than extemporaneous speaking, in the same tones, for one or two hours. The reason is, that in the latter case the mind conceives the thought in season for the organs of speech to fall into a natural attitude, and utter it with ease. The two work harmoniously together, — the instruments of articulation following the mind, and easily and naturally uttering its conceptions. Whereas in the case of reading, the mind itself is, at least partially, ignorant of what is coming until it is just upon it, so that the organs of speech, being warned of what is to be done only at the moment their service is required, do their work under a perpetual surprise and constraint. The difference is, in some respects, like that between walking freely at large, without regard to where the feet are put down, and being obliged to step exactly in the footprints of some traveller who has gone before. In the latter case, the muscles tire much sooner, because they work in fetters.

I have thus spoken particularly of the clergy, though it is not by any means they only, but all classes of people who are afflicted with this dangerous malady.

These diseases often *begin* with a cold. But colds are seldom taken except when the nervous system is depressed, so that they are, in fact, to be traced back to the same cause which I have assigned to catarrhal or throat complaints themselves.

These Complaints Worse at Night. — It is worthy of note, that all these complaints, and many others, are worse during the night. This is easily explained when we remember that the atmosphere has the least amount of electricity in it at three o'clock in the morning, and that the first minimum atmospheric pressure, which happens twice a day, occurs not far from the same hour. *From three to four in the morning, therefore, the nerve-power sinks to its lowest ebb;* and those diseases which owe their existence to anxiety, overwork, etc., suffer, at this time, their greatest daily aggravation. Death occurs,

too, more often during these hours, than in any other portion of the twenty-four.

Treatment. — Some years ago these diseases were thought to be incurable; and by all the appliances of medical art then known, they were so. But time has brought a successful method of treatment, as well as a clearer knowledge of their nature.

This treatment consists in what is called topical medication, or the applying of the medicine directly to the diseased part. The medicinal agent more extensively used than any other is a solution of *crystals* of *nitrate of silver*. This substance is not, however, adapted to *every* case, — other articles succeeding better in some instances. Modern chemistry has given us a variety of agents from which the skilful physician may select a substitute, should the nitrate of silver fail.

The operation of applying this and other substances to the air passages, is a delicate one, requiring tact and experience. Surgeons had supposed it an anatomical impossibility to introduce an instrument into the larynx; but this has been practically demonstrated to be a great mistake.

Instruments. — The instrument devised and used by Dr. Horace Green is a piece of whalebone, bent at one end, to which is attached a small, round piece of sponge. This, dipped in the solution, is dexterously introduced into the laryngeal cavity, and applied directly to the diseased part.

I formerly used this instrument myself, and am happy to know, that notwithstanding its defects, it was generally successful. Yet where the larynx was highly inflamed, with a swollen and ulcerated condition of the epiglottis and lips of the glottis, I am sure I sometimes had the singular powers of the nitrate of silver put at defiance by an irritation evidently produced by the sponge of the probang. Upon its introduction, in such cases, the parts contract upon and cling to it, and suffer aggravated irritation, almost laceration, upon its withdrawal, however carefully effected.

Laryngeal Shower Syringe. — Such defects in the probang led me to contrive an instrument, which I call a *Laryngeal Shower Syringe*. It is in the form of a syringe, the barrel and piston of which are made of glass, silver, or gold, as may be desired. To this is attached a small tube, made of silver or gold, long enough to reach and enter the throat, and bent like a probang, with a *globe* or bulb at the end, from a quarter to a third of an inch in diameter, pierced with very minute holes, which cover a zone around the centre about one-third of an inch in breadth.

This silver bulb I daily introduce into highly inflamed and ulcerated larynges, generally without any knowledge of its presence on the part of the patient, until the contained solution is discharged. The instrument, being charged, is carried to the proper place, when a delicately quick pressure upon the piston causes very fine streams to flow through the holes in the form of a delicate shower, and all sides of the walls of the larynx are instantaneously bathed.

How Introduced. — The introduction of this instrument into the larynx is easy. Upon the approach of any foreign substance, the epiglottis instinctively drops down upon the entrance to the larynx, guarding it against improper intrusions. It has been found, however, that when the root of the tongue is firmly depressed, this cartilage *cannot* obey its instinct, but stands erect, its upper edge generally rising into view. Availing himself of this, the surgeon has only to depress the tongue with a spatula, bent at right angles, so that the left hand holding it may drop below the chin out of the way, and as the epiglottis rises to view, slip the ball of the instrument over its upper edge, and then with a quick yet gentle motion, carry it *downward* and *forward*, and the entrance is made. I have often admired the faithfulness of this epiglottic sentinel, who, when overborne by superior force, stands bolt upright, and compels us to enter the sacred temple of speech *directly over his head!*

Pharyngeal Shower Syringe. — For washing the upper part of the throat, I construct the instrument with a *straight* tube, with holes over the outer end of the globe, and extending to the centre. This washes instantaneously the fauces and pharynx, but does not throw the solution back upon the tongue. Its main advantage over the probang is, that it bathes every part of the fauces and pharynx instantaneously, and does not subject the patient to the coughing and gagging which follow the slower and rougher process of drawing the sponge from side to side across the cavity of the throat.

Nasal Shower Syringe. — Inflammations in the back passages to the nose, called catarrh in the head, have been almost inaccessible by any reliable healing agent, and consequently incurable. The probang could only reach a *short distance*, and occasioned great suffering. I have had a syringe constructed with the tube bent at an angle of forty-five degrees, and the globe, very small, pierced with a few fine holes at the upper end. Carrying this globe up behind the velum palati, with a single injection I wash both passages clear through. I have had the pleasure of curing a large number of bad cases, of many years' standing, to the surprise and delight of the patients.

About nineteen twentieths of the physicians who have examined these instruments, and so far as my knowledge extends, all who have used them, think them much better than the probang. As to patients, I have yet to see one who will allow the sponge to be used after trying both.

Have Superseded the Probang. — In my own practice the syringes have superseded the probang *altogether*. My reasons may be briefly stated. I have already said there is less irritation produced. A piece of sponge drawn over an inflamed surface, especially when clung to by the irritated and quivering parts, must necessarily, in some cases at least, aggravate the symptoms of disease. To this consideration add the comfort of the patient during the operation. It is so quickly and delicately done with the syringe, that it is scarcely known when the act is performed. The straight syringe does not touch the throat

at all. On touching the probang to the throat, the nitrate of silver unites with the mucus upon the surface, instantly covering the sponge with an albuminous pellicle, something like that which lines the shell of an egg, preventing, in a degree, the further pressing out of the solution, and rendering its contacts with other parts of the surface comparatively powerless. For this reason, the sponge pushed down into an ulcerated bronchus, as Dr. Green recommends, must be utterly valueless as a remedial agent. Mopping, as it does in its whole course, a larynx and trachea, lined in some cases with puriform matter, and generally with mucus, every inch of its descent doubles the gravity of this objection. Let it be considered, too, that in applying the remedy to an ulcerated larynx, the sponge cauterizes the healthy parts above, in its descent, and thus unfits itself for doing much for the diseased part; whereas the syringe retains its solution till it reaches the affected place, and then pours a clean shower directly upon it, and upon *no other part.*

Considering these manifest advantages of the syringes, I am surprised that any physician should still use the probang, — especially as one of these instruments, the Nasal Syringe, accomplishes an object which the probang cannot effect at all, not even in a rough way. I have wondered, too, how any parent can allow a child, suffering with croup, to be tormented by having a sponge pushed down its throat, when a syringe would give it so much less pain.

I will mention briefly one or two cases of croup and diphtheria, selected from a great number treated by me for the last few years, where the syringes were successfully used, after several attempts to use the probang had been made, and failed, and where the pain caused by using was so small, and the relief so instantaneous and complete, that the patients were anxious for my return to use it again.

On the 25th of November last, I was called to see a little boy of Mr. R., five years old, who had had an attack of membraneous croup some days previous; and when I saw him the voice had sunk to a whisper, and the cough was entirely muffled, so that I had no doubt of the fatal termination of the case, and expressed my opinion to that effect to the astonished parents. The probang had been used by the physcian in attendance, which had caused so much suffering that for the two days previous the parents had prohibited its use. It had no doubt increased the irritation, besides nearly causing strangulation.

It was, therefore, with great reluctance that they consented to let me use the syringe, which I did, to the great relief of the little sufferer, and to the entire satisfaction of the parents.

The strength of the solution of the crystals of the nitrate of silver used was 20 grains to the ounce of water, which I injected freely, once in three hours for the first day, and then two or three times a day for two or three days. His recovery was rapid and complete.

I will now mention the case of a young woman, with diphtheria, where the syringe was used with success.

On the evening of the 10th of September last, I was called to see Miss T., of this city, who had an attack of diphtheria the day previous. Found her in bed, very much prostrated, breathing with great

difficulty, and uttering at every inspiration a croupal sound, which at times was followed by a short convulsive cough. The face was flushed, pulse 124, small and feeble, and she complained constantly of a sense of suffocation and of great distress in the laryngeal region.

On inspecting the throat, the fauces and the pharyngeal, membrane as far down as it could be seen, presented the appearance of a high degree of inflammation. One of the tonsils was nearly covered with the diphtheretic membrane, and the upper and back part of the throat were thickly studded with small white or cream-colored spots.

The physician in attendance had tried first, a swab, or mop as she termed it, and then the probang, which gave her so much pain that he was obliged to give it up. He then gave up the case as hopeless. At my earnest solicitation she consented to the use of the syringe. With a solution of the crystals of the nitrate of silver, of the strength of 60 grains to the ounce of water, I injected freely the fauces and the upper part of the cavity of the larynx. For a few moments the difficulty of breathing and feeling of strangulation was increased, but very soon a large amount of viscid, ropy mucus was discharged. In the course of half an hour after the use of the syringe, the symptoms had improved, the respiration was less laborious, so that in a short time the patient obtained some sleep. I was afterward called, as she thought herself worse, but found that an application of the caustic with a syringe was all that was required. There was no further trouble with the case.

Several parties in this country have got up imitations of these syringes, and have made themselves liable for damages under the patent; but they are persons of little or no responsibility, and I have not as yet brought the law to bear upon them. Those who purchase and use these imitations, should bear in mind that they are also liable for damages.

FIG. 84.

[*Patented December* 6, 1853.]

Figure 84 represents these syringes as they lie in a case.

Mode of Using. — The glass barrel and piston of my instruments are delicate, but they need not be broken. I handle them with the same ease that I do a spoon in feeding myself, and not in a very dissimilar way. The last three fingers are placed on the under side of the barrel, with the thumb on the upper side, — the index finger being poised over the end of the piston, ready to drive it home at the proper instant. The motion of the piston should be *quick*, so as to cause the streams to leap out in jets; yet *delicate*, that they may not impinge with too much force upon the diseased surfaces.

They should be rinsed with water immediately after being used. But even with this precaution, a small residuum of the nitrate remains and crystallizes, and after a time partially closes the holes. They must then be picked out with the point of a needle.

When the silver tube becomes detached from the glass, it may be fastened on with common sealing wax; first melting the wax and

sticking it around the glass; then heating the silver over a lamp, and pressing it on.

Amount of Solution to be Used. — The amount of solution to be used should be small. Half a dram is enough. The piston of the syringe need be drawn up only from an eighth to a third of an inch. Strangling is not often produced by these operations; but to make its prevention still more sure, let the patient be directed to fill the lungs with a long inspiration while the operator is depressing the tongue.

Strength of Solution. — The strength of the solution in ordinary cases of chronic folliculitis, etc., should *generally* be about forty grains of the crystals of the nitrate of silver to the ounce of water. But in all *acute* diseases of the air passages, it should be considerably stronger, — varying from one to two drams. A preparation of this strength is powerfully antiphlogistic and sedative. In those cases of *chronic* disease, where the inflammation is of a low grade, and the mucous membrane is in a relaxed, atonic condition, looking either sodden and pale, or of a dark color, like the cut surface of beef, some days exposed to the air (as is often the case in throats of literary dyspeptics), then a solution of fifteen to thirty grains to the ounce, is sufficient. This strength acts as a stimulant, and is well suited to throats in such condition, but would be *injurious* in high grades of inflammation. Catarrh in the head *generally* requires only about this strength. I am sorry to say, the topical mode of treating throat affections has been in some places injured, in the public estimation, by a lack of knowledge and judgment on the part of the operator, in choosing the strength of his solution.

To determine the proper *frequency of the operation*, also requires judgment and experience. In an ordinary case of chronic disease, the treatment may begin by showering the throat once a day for a week. Then the operation should be repeated three times a week, for a shorter or longer period; then twice a week, and at last once a week.

Attendant Diseases. — Among the persons I am treating for diseases of the air passages, many are dyspeptic and suffer with *depression of spirits*. So often does this symptom present itself, that I regard it as almost one of the peculiarities of throat disease. Persons thus depressed generally have the dark and dingy look of the face which indicates functional derangement of the liver. They are often emaciated, nervous, hypochondriacal, irritable in temper, and are exhausted by an excessive secretion of urea. The urine of such persons is always acid, and *loaded with crystals of oxalate of lime.*

An explanation of this fact has been attempted, by supposing that the oxydation of carbon (of which these persons have a superabundance), imperfectly accomplished in inflamed respiratory organs, is vicariously effected in the capillaries of the kidneys, — oxalic acid (C_2O_2.) instead of carbonic acid (CO_2.) being the result.

The crystals of oxalate of lime are octahedral in form, and, in the field of a good microscope, are beautiful objects for inspection.

Lawyers, clergymen, statesmen, and, in general, those who labor hard mentally, with but little bodily exercise, and who have a great weight of care resting on them, are the persons who suffer most from this complication. Generally, the inflammation in the throat is of a low grade, and must not be treated with a *very strong* solution of nitrate of silver.

Of course when these attendant diseases exist, something more is needed than the local treatment. For the troubles just described, the treatment for hypochondria and dyspepsia will be proper.

Elongation of the Uvula.

The uvula is the small teat-like or pendulous organ which hangs down from the palatine arch, just over the root of the tongue. It is very apt to get inflamed, and its parts becoming relaxed, it stretches out lengthwise, so that its lower extremity sometimes rests upon the tongue. (Fig. 85.) When this happens, it flaps about, backward and forward, and to the right and left, — touching the throat at various points, and by the tickling sensation produced, exciting a most incessant, uncontrollable, and racking cough. Some of the most distressing coughs I have ever heard, have been produced and kept up by this cause alone. Many a fatal consumption has begun in this way. When long inflamed, it often gets much out of shape, being sometimes bent nearly double.

Fig. 85.

Treatment. — In some cases, the uvula, thus elongated, may be reduced back to its natural size, by an astringent gargle, composed of an infusion of white-oak bark, with a little alum dissolved in it (232); but it will generally stretch out again and again, upon the appearance of any fresh cold, and, therefore, the only certain cure is to cut it off.

To do this, take hold of it with a pair of common forceps, and having stretched it down a little, clip it off above the forceps, with a pair of curved scissors. Nearly the whole of it should generally be removed. To take off a part only, leaves a stump, which is often more objectionable than the whole organ. Its removal never injures the speech in the least. In many cases of nasal catarrh, this organ is a sort of diseased centre, from which the inflammatory action spreads upward into the nasal cavities, and no medicine or power on earth can effect a cure until this offending member is snipped off.

Acute Inflammation of the Tonsils.— *Tonsilitis.*

The tonsils are chiefly a collection or mass of small mucous follicles or glands. They secrete a portion of the fluid which keeps the throat moist.

There is a class of persons who suffer about every winter, sometimes oftener, with an attack of acute inflammation of these glands, which causes great suffering for several days. The trouble begins with a slight soreness and swelling in these glands, which gradually increase until the mouth can scarcely be opened, and the act of swallowing is attended with indescribable suffering. At length, in from four to ten days, an abscess forms and breaks in one or both glands, which produces immediate relief.

Treatment. — The inflammation may sometimes be cut short by thrusting a lancet into the tonsils, and bleeding them freely, and then steaming them by the inhalation, by means of an old teapot, of the steam of mullein leaves and hot water. But the only *cure* is to be found by cutting off the tonsils, after the inflammation has subsided. This will put an end to the attacks at once.

Tonsils which are subject to these periodical attacks of acute inflammation are always more difficult than others to operate upon, as they are almost invariably bound down very tight to the throat, and cannot be raised up for convenient excision.

Chronic Inflammation of the Tonsils.

In many of the fallicular diseases of the throat, these glands are affected by a chronic inflammation, and are found enlarged, and sometimes very much hardened. In such cases they secrete a thin, unhealthy, irritating, fluid, which is spread over the throat, increasing and perpetuating its disease. Much of this secretion, finds its way into the stomach, and thence into the circulation.

In the throats of many young persons and children, these glands are permanently so large, as nearly to fill the fauces. The respiration of many children thus afflicted, is difficult, and when asleep they can only breathe with the mouth open. The defective breathing of such children often occasions contraction of the chest, and thus lays the foundation for consumption. From these diseased parts, the inflammation often spreads upwards, into the posterior nares, and many times enters the eustachin tubes, causing deafness or pain in the ears. Such children often breathe as though they had a bad cold in the head. Their health and safety require an immediate attention to this state of things.

Treatment. — It is customary to attempt to reduce enlarged tonsils by astringent gargles, by repeated applications of a solution of nitrate of silver, and by other remedies, and particularly by brushing them over with the tincture of iodine. As a general thing, these applications are useless, ending in disappointment. As with the elongated

uvula, the remedy is found only in *excision.* Cut them off. The throat seldom gets well until they are removed. The speediness of the recovery after the removal is often surprising.

Improved Tonsil Instrument. — For the excision of these glands, I found the same lack of instruments as for making topical applications to the throat. The only one which had any claims to regard, was the guillotine instrument. It had, however, no facilities for drawing the tonsil forward. Generally, all that could be done with it, was, to *trim* the gland, which did little good, for it became again enlarged. I have prepared an entirely original instrument, with which the extirpation of these glands is easy and expeditious. It has two cutting blades in the shape of crescents, which, when open, leave a proper space for drawing the tonsil between them. Two polished guards which I formerly had made of steel, but now of German silver, protect the upper and the under surfaces of the crescentic blades, and running back, are fastened by the common rivet, which holds together the shanks, so that, when open, the blades are concealed under the guards. The tenaculum rests upon the rivet, as upon a fulcrum, and, dipping between the blades, takes hold of the tonsil, and draws it up for excision. Cutting, as these blades do, the entire circumference of the gland first, and at the same instant, and the central portion last, the operation can never fail. The entire tonsil, even when much hardened, is swept off with a cleanness and ease, which, at the first trial, surprises the operator not less that the patient. The pain of removing these glands is so trifling, as scarcely to be thought of; and the pretence that evil consequences follow their removal, is the offspring of great ignorance of the whole subject.

FIG. 86.

[*Patented January* 17, 1854.]

To operate easily, take the instrument in the right or left hand, according to the side to be operated upon; take the forceps in the other hand, and running them through the open blades, into the mouth of the patient, take firm hold of the tonsil; then slide the instrument down over the forceps, and lifting the gland up between the blades, cut it quickly off.

I am aware that a few irregular practitioners, who stand outside the profession that they may act without responsibility, have declared that mischievous results follow this operation upon the tonsils. Their reasons for so declaring are manifest. They have never performed the operation, and have not the skill to do it if they would. They expect, too, that those nervous persons who dread the operation, will, when told by a physician that it is necessary, strive to evade it by seeking their advice. Such practitioners are shrewd, but neither honest nor wise. They defeat their own purpose in the end. I have again and again had patients leave me when this operation was urged upon them, and finally return and submit to it, after nearly losing their lives in the hands of dishonest quacks. A few of these

practitioners have taken the same course in regard to the use of nitrate of silver, and for similar reasons.

Curability of Throat Diseases. — I have dwelt somewhat upon the preceding forms of throat disease, not so much because they have been a speciality with me for the last ten years, as because they prevail to a fearful extent, and are, in thousands of cases, but the first stages of fatal disease of the lungs.

If not connected with lung disease in the *beginning*, my experience in treating them enables me to say, emphatically, they are generally *curable*.

But patients often put the question to me, — "If cured, will I ever have the complaint again?" My answer is, — "Unless I can plant in your constitution a better protection than your Maker put there at your creation, you will of course be *liable* to a second attack." But then, where the lungs have been entirely free from disease, I have never yet seen a case of simple throat complaint relapse and become *dangerous* after proper treatment with the syringes. Let not those, therefore, who have been benefited, but not entirely cured by this treatment, undervalue what has been done for them. Even in such cases, the advantage derived to them amounts to just the value they attach to — *the continuance of life*.

Dangers of Delay. — In closing these remarks, let me warn the reader against the dangers of delay. Many of those who finally seek my services in these complaints, first try all nostrums, and tamper with their disease till the case is either critical or hopeless. Too many wait till they are near enough to the engulfing whirlpool to hear it roar, before they seek in any practicable way to escape its dangers.

Scarce a day passes but cases come into my hands which at first were only a slight inflammation of the pharynx, and might have been cured in a few days, but which, from long neglect, has gradually crept down the windpipe, spread over the widely distributed mucous lining of the bronchial tubes, and thus become curable only in a partial degree, and after long and tedious treatment. Hundreds of persons in this city, and thousands in New England, are now suffering from slight attacks of this sort, who might be rid of the affliction in a week or a fortnight, but who will either carelessly give it no attention at all, or resort to useless nostrums, until it has run through its primary stages and invaded the constitution, and will finally die of some of the forms of pulmonary disease.

Cases Treated.

In July, 1852, Professor —— of W——, Mass., a distinguished teacher and composer of music, called on me to obtain relief from laryngitis and tracheitis, from both of which he was suffering, in connection with bronchial and pulmonary irritation. A year previous to this, his health had suffered a general break-down from these complaints. He had soreness in the larynx and trachea; a severe cough

and large expectoration; he had hoarseness, with inability to sing; night sweats; emaciation; general debility and lowness of spirits; in short, the whole catalogue of symptoms which indicate impending bronchial consumption. By advice of physicians and friends, he went to Europe and travelled extensively. Finding no relief, he pushed on to Africa. On reaching Cairo, his disease showed the first abatement. Remaining here a few weeks, he found himself, as he thought, about well. But on reaching Europe, upon his way home, his cough, with all his other bad symptoms, returned, and after a year's weary search for health, he came to the wharf at Boston in about the same condition as when he left. It was at this moment, that, disheartened, and expecting to die, he picked up the Evening Traveller, the first paper that met his eye, and saw an article on throat diseases, which brought him to my office. Fortunately, before his departure for Europe, Mr. —— had bought a farm in W——. I gave him an instrument, with the proper medicines to inhale, and directed him to work every day on his farm, to the extent of his physical ability, and to come to me three times a week to have the larynx and windpipe showered with a solution of nitrate of silver. These directions, with others relating to his general health, he followed to the letter. It is enough to say, that all his bad symptoms gradually subsided, and upon the approach of the following winter he found himself nearly recovered. In accordance with my advice, however, he abstained from professional labor until the following spring, since which time he has pursued his calling diligently.

In 1853, Mr. ——, a merchant of this city, came to me with two enormously enlarged and hardened tonsils, with which he had been afflicted for a long time. One of the glands had been operated on five times, the other eleven times, by one of our best surgeons. But the old guillotine instrument used was not large enough to permit either gland to be drawn into it, and only small pieces could be shaved off. The consequence was, that they were made no smaller by the operations; and being often cut, they were hardened by it, and had taken a very obstinate form of disease, so much so, that the patient, though naturally a strong man, was seriously threatened with pulmonary disease. He had travelled much during the preceding summer, but was in no way improved by it. I had a large instrument made expressly for the purpose, through which the glands could be easily drawn, and cut them both through the centre, or root, removing one half. A solution of nitrate of silver, fifty grains to the ounce, was applied to the throat three times a week, for about a month, at the end of which time, the patient was dismissed well, and has remained so to the present time.

In February, 1852, another merchant of this city, Mr. J. A——, came under treatment for a well-marked case of follicular disease, with nasal catarrh and bronchitis. Indeed, the lungs were on the point of becoming a prey, as a fine rattle was plainly distinguishable at the top on both sides, and blood was raised at various times.

The uvula first being excised, the whole throat and nasal cavities were showered from two to three times a week, for two or three months, every bathing bringing away, during the first part of the treatment, enormous quantities of tenacious, ropy mucus. To this treatment, with inhalation, and constitutional remedies, the disease yielded slowly but surely, and Mr. A. has a good prospect of pursuing his profession in comfort to old age.

In February, 1857, I was inquired of respecting the prudence of undertaking to get a young man to Boston from one of the northern towns of New Hampshire, who was supposed to be rapidly sinking in consumption. After hearing the case described, I decided it to be a safe undertaking. Though feeble, he came safely in two days. He had the most incessant, tearing, and destructive cough, I ever heard. The moment I heard its peculiar sound, I suspected the source of the trouble; and, seating him in a chair, I opened his mouth, and found the uvula enlarged to a size, and stretched down to a length, which I had never witnessed before. It was lying down upon the tongue, as in cut 85, which is a good representation of it. Without giving him any notice, I took the forceps and scissors, and cut it off, the whole of it. I told him to go to his hotel, and come to me the next morning. He entered my office the next day, cheerful and laughing, saying he had not coughed any all night, and had slept well, — a thing he had not done for several months. In two weeks, he could walk three miles, and I sent him home well. But for the operation, he would have died within six weeks.

I would be glad to add a great number of cases to the above; but these are all for which I have room.

A Cold.—Influenza.

A SLIGHT attack of the disease about to be described, affecting only here and there a person, and lasting only for a few days, is called *a cold*. When it affects a large part of the community at the same time, lasting many days, or even weeks, it is then an epidemic, and passes under the name of *influenza*. In this latter form, it sometimes spreads over a whole country, and has at times, as in 1832, extended to nearly the whole civilized world. It often shows marked severity in its progress, and leaves serious results behind.

Symptoms. — A tingling, with dryness, and a sense of fulness in the mucous membrane of the nose, are among the first indications of an attack of this complaint. Sneezing is a common symptom. Soon, pain is felt in the forehead, and breathing through the nose becomes difficult. The eyes are red and watery, the throat is sore; there is a dry cough, hoarseness, thirst, general lassitude, chills, and a desire to get near the fire. The mucous membrane of the nose, throat, windpipe, and breathing tubes, is inflamed, red, swollen, and sometimes painful.

In a short time, water begins to run from the nose and eyes, and

the cough becomes a little more moist. There is also a slight discharge from the throat and tubes, which gradually increases, and, at length, as the disease declines, and becomes less acute, the expectoration is thick and yellow.

Aching of the back and limbs, thirst, loss of appetite, flashes of heat, and chills whenever the patient is exposed to air a little cooler than he is accustomed to, are almost constant attendants upon the disease.

Causes. — It is not always easy to say what the causes of this complaint are. Frequently, it can be traced to an improper exposure to cold or dampness; but in a great majority of cases, especially when it takes the form of influenza, the causes are not obvious. They probably exist in some peculiar states of the atmosphere, and in a depression of the nervous system.

The influence upon disease of the different degrees of density in the air which surrounds us, and of other circumstances affecting it, have not been much studied. Some valuable facts will be drawn from this source before many years. The putting upon the body, or taking from it, several tons of pressure every time the barometer rises or falls, must have, of itself, no small influence upon its health. The comparatively new science of Physical Geography, by spreading before us its interesting facts in regard to temperature, storms, atmospheric currents, etc., is opening the way for the physician to learn a great deal more about the causes of disease than he now knows.

Treatment. — In mild cases, only the most simple treatment is required, — such as remaining in the house for a few days, soaking the feet in warm water, taking a gentle sweat, drinking warm infusions of flax-seed, mullein, slippery elm, or warm lemonade, and taking only a spare vegetable diet. If the bowels be costive, some gentle physic (34) (41) may be used. A laxative drink (132) will likewise be useful.

When the attack is more severe, sweating must be induced by decisive measures. This may be effected by the spirit vapor bath, or by putting the patient in bed, putting bottles of hot water to the feet and sides, and administering warm drinks, and the compound tincture of Virginia snake root. Five drops every hour of the tincture of veratrum viride, will often cause very free perspiration, and will reduce the inflammation upon the mucous surface.

An emetic is sometimes very useful. To produce vomiting, use the powder of ipecac, ten to twenty grains, or the compound tincture of lobelia.

It soothes the inflamed mucous surfaces very much to inhale the vapor from half a pint of hot water, with five drops of tincture of veratrum viride, or the same amount of the tincture of aconite root.

If the cough is severe, use the preparations recommended under bronchitis and consumption.

In the latter stages of the disease, if there be debility, — as there generally is, — quinia, iron, nux vomica, etc. (75), should be taken; or, to support the nervous system, the extracts of scullcap, and boneset,

and the sulphate of quinia (81) will be found useful. At this stage of the complaint, the diet should be more liberal and nourishing.

The patient should not venture into the open air, until the unpleasant sense of chilliness, peculiar to the disease, ceases to be produced by exposure.

Acute Inflammation of the Epiglottis.

This is the disease by which our country lost its most loved and distinguished citizen, George Washington. This complaint was not understood at the time of his death, — the intelligent physicians who attended him, supposing it to be inflammation of the windpipe. From their very clear description of the symptoms, we now know it to have been an acute inflammation of the epiglottis and glottis.

From the rapid inflammation of the epiglottis, water is effused into this cartilage, so as to puff it up, and prevent it from shutting down in the act of swallowing. The lips of the glottis are swollen from the same cause, and brought so near to each other that air passes through to the lungs with great difficulty, and unless relief is soon obtained, the patient is strangled.

Symptoms. — The disease begins with a severe chill, accompanied with some pain, and a sense of stricture or tightness in the upper and fore part of the throat. There is cough, with difficult and sometimes painful swallowing. These symptoms are soon followed by quick and laborious breathing. Speaking aloud is from the first difficult, and soon becomes impossible. As the complaint runs its rapid course, the breathing grows more difficult, and death soon results from complete strangulation.

Treatment. — Apply immediately to the parts, a strong solution of nitrate of silver. The solution should be of the strength of ninety to one hundred and twenty grains to the ounce of soft water. It should be applied every hour or two till the feeling of suffocation subsides, and should be done with the laryngeal shower syringe, though if this is not at hand, the sponge probang may be used.

While this local treatment is being employed, liberal doses, from five to twenty drops of tincture of veratrum viride should be given every hour, watching the effect, and discontinuing when the pulse sinks too low.

Hot fomentations applied externally, and filling the room with steam, as recommended in cases of croup, would be useful.

Mumps. — *Parotitis.*

This disease appears most often among children; but as it is not confined to them, I have not placed it among their complaints.

Symptoms. — It begins with soreness and stiffness in the side of the neck. Soon a swelling of the parotid gland takes place, which is painful, and continues to increase for four or five days, sometimes

becoming very large, and making it difficult to swallow, or open the mouth to receive food. After the fourth or fifth day the swelling subsides, and disappears in from seven to ten days.

Both glands generally swell about the same time, but sometimes the swelling appears in one only after it has subsided in the other, and occasionally the swelling is wholly confined to one side.

When the swelling is great, there is heat, and sometimes fever, with dry skin, quick pulse, furred tongue, constipated bowels, and scanty and high-colored urine.

The affection is sometimes translated, as we say; that is, in females, the breasts swell, and in males, the testicles become swollen and painful. This accident generally happens in consequence of taking cold from some imprudence.

The disease is contagious; that is, it is communicated from one person to another.

Treatment.— In mild cases, very little treatment is required. Keeping the face and neck warm, avoiding exposure to cold and damp, drinking warm infusions of balm, spearmint, or sage, and taking occasionally, if there be some severity of symptoms, four to six grains of Dover's powder; or the compound powder of jalap, if there be costiveness, is about all that is required. The diet should consist of rye hasty pudding, or brown bread and sweetened water.

If the case be severe, and other glands swell, physic must be freely used, leeches must be applied, and cooling lotions, or poultices. Sweating must also be induced by the compound tincture of Verginia snake root, or by a vapor bath.

DISEASES OF THE CHEST.

Consumption.—*Phthisis.*

At the head of the diseases of our climate stands Consumption,—at their head both as it respects prevalence and fatality. Small pox, yellow fever, and cholera, are terrible in their visitations; but what are all their aggregated slaughters compared with the ceaseless, silent march of this fell disease, which steals away in their fresh prime the brightest and the best?

Boston, from its population of 160,000, loses by consumption about fifteen per week, sixty-five per month, or about seven hundred and eighty per annum. An equal mortality from any disease not often among us, would send our citizens in terror to the country, and cause the stoutest hearts to feel that "in the midst of life we are in death." Massachusetts loses about 6000 per annum; New England, not less than 20,000; and with the State of New York added, the victims of this single disease swell to 40,000 a year! What an army! Picked from the choicest! All sundered from life untimely, and leaving more blight and sorrow behind than would perhaps twice or thrice the number whom any other pestilence would have selected. The magnitude of the evil places the question of the remedy before all others that pertain to the healing art.

Methods of Examining the Chest. — Before speaking further of consumption, I propose to do what has never been done, namely, to instruct the general reader, very briefly, in the method of examining the chest to learn the existence of disease. Perhaps this will be considered a departure, in some slight degree, from my purpose to make this entire book intelligible to the general reader. If so, my reply is, that there are *many* school teachers, mechanics, masters of vessels, and farmers, who have inquiring minds, and sagacity enough to learn the physical signs of chest disease, and to make them, in many cases, practically useful; and that even readers of little reflection cannot fail to comprehend a portion of my explanations.

Position of the Patient. — In performing percussion upon the front of the chest, the patient should be required to sit in a square position, with the arms hooked over the corners of the back of the chair, and the head thrown a little back.

Instrument with which to Thump. — The index and middle fingers of the right hand are to be brought together, into a line, and used as the percussing instrument. The blow given with these is to be *smart* and *quick*, rather than heavy.

Medium to Thump Upon. — Either the index or middle finger of the left hand is to be pressed firmly upon the surface of the chest to be percussed or struck, and thus used as a pleximiter.

Auscultation. — Listening for the purpose of hearing within the chest the sounds produced by breathing, talking, coughing, etc., is called auscultation.

Instruments with which to Listen. — The naked ear is generally considered best for hearing low and delicate sounds; but for hearing loud and rough ones, it is not so good as the stethoscope, represented by Fig. 87. A still better instrument is the double-eared stethoscope, Fig. 88. It magnifies the sounds very much, and is apt to confuse an examiner not accustomed to it; but when the ear is once familiar with it, the aid it affords is very valuable.

FIG. 87

FIG. 88.

The examiner should pass from side to side, continually *comparing* the sounds upon one side, with those upon the other.

The patient must be calm, and the examiner in no hurry.

Healthy Sounds. — To become skilful either in percussion or auscultation, the examiner's ear must first be trained to healthy sounds. These are best heard in the child, in whom they are louder than in the adult.

In describing the healthy sounds in the different regions of the chest, I shall refer the reader constantly to Figs. 89 and 90.

Clavicular Region. — This, in Fig. 89, is represented by 1, 1. Upon thumping upon the collar-bones, the sound given out at the breast-bone end should be very clear; less clear in the middle; and dull at the shoulder end.

Subclavian Region. — This is represented by 2, 2, and lies between the collar-bone and the fourth rib, on both sides. It covers a considerable portion of the upper lobe of the lungs. The sound upon striking this space should be very clear.

Fig. 89.

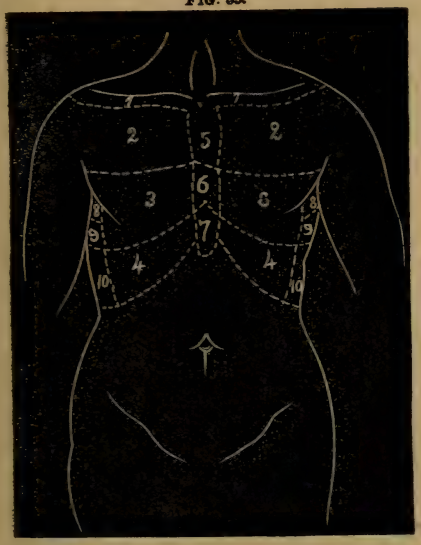
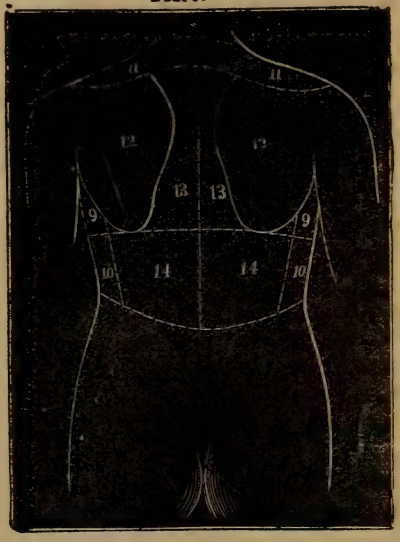


Fig. 90



The Mammary Region, represented by 3, 3, extends from the fourth to the seventh rib, on each side. In the upper part of this region, the healthy sound is clear; but at the bottom of it, on the right, the sound is deadened by the liver; on the left, by the heart.

The Infra-Mammary Region, 4, 4, lies between the seventh rib and the edge of the cartilages of the false ribs. On the right side, the liver makes the sound dull; but under the left side lies the stomach, which is hollow, and the sound is generally quite loud.

In the Sternal Region, 5, 6, 7, which covers the breast-bone, the sound is generally clear.

The Axillary Region, 8, 8, is in the arm-pits. In this the sound should be clear.

The Lateral Region, 9, 9, is immediately below the above, and yields, likewise, a clear sound.

The Lower Lateral Region, gives a dull sound on the right side, and on the left a very hollow one.

Fig. 90 represents the *back* part of the chest. In looking at this, we see the

Acromial Region, represented by 11, 11. In this space the sound is dull, but it has not much meaning.

The Scapular Region, 12, 12, covers the part occupied by the shoulder-blades. It gives rather a dead sound.

The Intra-Scapular Region, 13, 13, lies between the shoulder-blades, on each side of the back bone. If the patient's arms are crossed, and the head bent forward, a clear sound will be obtained.

The Dorsal Region, 14, 14, covers the base of the lungs, and, in health, gives a clear sound.

Observation. — If, now, on thumping upon the chest, we find a dull, dead sound in any spot where a clear one ought to be yielded, we are to conclude that underneath there is not the usual quantity of air; but we cannot tell *merely* by percussing, whether tubercles are deposited there, or the lung has become solid by inflammation, or water has been poured out into the cavity of the pleura. *This* point must be determined by auscultation, etc., to be explained gradually as we go along.

Auscultation of Breathing. — On applying the ear or the stethoscope to the chest, two sounds are heard which immediately succeed each other, — the louder is produced by the ingoing breath, or inspiration; the weaker by the outgoing breath, or expiration. These sounds will be further explained as we go along.

Auscultation of the Voice and Cough. — The chest of a healthy person speaking, communicates to the ear no distinct sound, but only a vibratory sensation, called, in technical language, the *pectoral fremitus.*

Over the larynx and windpipe, the examiner may hear natural pectoriloquy; between the shoulder blades, in the space corresponding to the roots of the lungs, natural bronchophony.

Philosophy of Chest Sounds. — The fulness and clearness of sound upon percussion, depends upon the amount of air in the chest.

The sounds called *breathing murmurs*, are caused by the expansion and contraction of the air-cells or vesicles, as the air passes in and out; hence they are called *vesicular* murmurs.

The friction of the air against the sides of the windpipe and large bronchial tubes, causes the blowing sound heard in those parts.

In children a larger amount of air enters the lungs, and the air vesicles are expanded with more force; hence their breathing has a louder sound, which is called *puerile* respiration. This kind of breathing, heard in the grown person, is a sign of disease.

The lung tissue is a bad conductor of sound; and the voice is accordingly heard only over those parts where large bronchial tubes are near the surface; heard elsewhere, it indicates disease.

Division of Consumption. — Consumption may be divided into two kinds, the tubercular and the bronchial. The former has a constitutional, the latter a local origin.

First Stage of Tubercular Consumption.

Physical Signs. — Dulness of sound on and under the collar-bones. Inspiration shortened; expiration augmented both in duration and intensity.

Occasionally a pulmonary, crumpling sound. Dry, crackling rattles.

The resounding of the voice increased at the top of the lungs.

General Symptoms. — A sense of weariness and languor.

Occasionally, slight, flying pains about the chest and shoulders.

A peculiar sensitiveness to the effects of cold.

Breathlessness on moving quick, or ascending a hill or stairs.

In many cases a blue lividity of the lips, and roots of the finger nails, and coldness of the hands and feet.

Occasionally, in females, even at this early stage, a cessation of the monthly turns.

Observations. — The formation of tubercles almost always begins at the top of the lungs. Laennec and others thought they appeared oftenest on the *right* side first; Louis, Andral Watson, Sir James Clarke, and others, believed they appeared more often on the *left* side. Recent investigations show that they were all mistaken. Tubercles appear first about as often upon one side as upon the other.

The pulmonary crumpling sound is caused by a mechanical obstruction to the expansion of the lungs. It is generally heard only during the drawing in of the breath. The sound is like that produced by blowing upon very fine paper.

Second Stage.

Physical Signs. — *Marked* dulness of sound on the collar bones, and extending below them.

Inspiratory murmur *diminished* in duration and intensity; expiratory murmur *augmented* in both.

In upper lobes of lungs, moist, crackling rattles, succeeded by mucous rattles. Also bronchial respiration.

In lower lobes of lungs, puerile respiration.

Sounds of the heart heard under the collar bones.

Bronchophony heard in the same parts as bronchial respiration.

General Symptoms. — A quickened pulse; slight fever towards evening.

Great susceptibility to the effects of cold, and liability to take cold easily.

Bowels generally costive.

The eye has a peculiar whiteness and lustre.

The skin and mouth become dry in the afternoon; chills occur about midday, followed by fever, during which the cheeks are flushed.

As the second stage advances to its close, a dry, burning heat afflicts the palms of the hands and soles of the feet.

Night-sweats occur at this time.

Observations. — A hollow, elastic body, containing air, gives, when struck, a clear sound. The dulness of sound on percussing the chest, arises from the absence of air in the air-cells, — these having been pressed together, or obliterated by the deposit of a mass of tubercles.

The destruction of these cells causes the cessation of the respiratory murmur.

This stage of the disease is often accompanied by an inflammation of the mucous membrane lining the air tubes. The air, pushing its way through the mucous secretions in these tubes, forms bubbles, the bursting of which causes the rattle. The crepitant rattle is produced by inflammation around the tubercles. The moist, crackling rattle is caused by the softening of the tubercles.

The lungs, rendered more solid by the deposit of tubercles, become better conductors of sound; and this causes the beating of the heart to be heard as far off as under the collar bones.

Bronchial respiration gives the idea of air blown through a tube; cavernous respiration, of air passing into a large enclosed cavity.

Third Stage.

Physical Signs. — In this stage cavities are formed. If the cavities be small, and considerable tuberculated lung surrounds them, the sound, upon percussion, is still dull.

If the cavity be large, and near the surface, there is occasionally a tympanitic sound.

Sometimes a sound is heard like striking a cracked pot.

Gurgling; cavernous rattle; cavernous breathing; amphoric breathing; now and then, metalic tinkling; pectoriloquy; cavernous cough.

General Symptoms. — Great loss of flesh, and weakness; diarrhœa and night-sweats; swelling of the feet and legs; sore mouth; and raising of matter with specks of tubercle in it like crumbs of cheese.

Observations. — The gurgling rattle is caused by air displacing liquids, and the formation and bursting of bubbles. It resembles the sound produced by blowing through a tube immersed in soap-suds.

Cavernous breathing is nothing more nor less than the sound produced by air, breathed in and out, entering and retiring from a cavity. The air appears, sometimes, to one listening with the stethoscope, as if it were sucked into his ear during inspiration, and blown back again during expiration.

Amphoric respiration is simply an *augmentation* of cavernous breathing, and results, of course, from an increase of size in the cavity.

In pectoriloquy, words uttered by the patient, seem to pass through the stethoscope, into the ear of the listener. The cavity should be empty, moderate in size, and have dense walls, in order to furnish the best specimen of this sound.

Air suddenly driven backward through the windpipe, and out of the mouth and nose, by smart raps upon the chest over a cavity, gives the sound of the cracked pot. It is best heard when the patient's mouth is partly open. The same sound is produced, on the same principle, by locking the fingers of the two hands, and joining the palms, so as to leave a small space or cavity between them, and then expelling the air from that cavity, by gently striking the back of one hand upon the knee.

Causes of Consumption. — The human constitution as shown by Liebig, in his profound work on Animal Chemistry, is governed by two forces, the nervous and the vegetative. The former disposes the particles composing the body to a state of motion; the latter inclines them to a position of rest.

In vegetative life there is motion in one direction only, so to speak; that is, motion which tends to the opposite of motion, namely, rest In vegetables, whose life is wholly under this power, there is no waste; for here, all ultimate particles, having once taken a place of rest, remain undisturbed. In a tree, a layer of matter once deposited, always remains. Hence there is *growth* as long as the tree lives. There is no power to break up and destroy.

But in the animal body there is motion in two directions, or a circuit of motion. Particles which under the vegetative force have been put to rest, are perpetually being displaced by the nervous energy, and reduced to unorganized amorphous compounds, to be burned in warming the system, or cast out by the several excretory processes.

So constant is the action of these two forces, that John Hunter compared the human system to a whirlpool, into which the particles of matter are perpetually poured, under the influence of the vegetative power, and out of which they are as constantly whirled by the nervous force.

By a little reflection upon these antagonisms, the reader will see that it is just when the vegetative force transcends the nervous, that the body increases in weight, and acquires that state in which the blood corpuscles abound, and the tendency, if to disease at all, is to that of the inflammatory kind. It is the tonic condition of the system. Nutrition is more rapid than destruction. New particles are laid down faster than old ones are taken up. The body *grows.*

On the other hand, when the nervous force overmasters the vegetative, when the outward or centrifugal motion of the whirlpool prevails, then it is that the body is attenuated, the blood thinned and made serous, and the consumptive or atonic condition is established. *Now*, there is too much motion. The nutritive particles, instead of tending to a state of deposit for the re-supply of waste matter, become fugitive in their habits, perpetually fleeing, like convicts escaped from prison. Introduce this power, in excess, into the vegetable kingdom, and the matter deposited upon the tree, instead of remaining to swell its bulk, would be driven off by the nervous force; and the tree, instead of growing, would be annually *lessened*, become sickly, and die of consumption.

In Tubercular Consumption, the system is like a field deluged with a flood: nothing can take root. The repeated shocks of the nervous battery sent to the absorbents so quicken them in their work of removing waste matter, that they dislodge much which is not yet worn out, and assist in casting out of the system not a little designed to be used in its renewal. A healthy deposit is thus prevented, and nutrition is at an end. The nutritive arteries, those little builders of the human frame, are overmastered by the stimulated lymphatics; the constructive material is wrested from them, and borne beyond their

reach, and the body wastes from want of nourishment. The blood becomes thin and watery; and from the increased serous portion, chiefly albumen, are depoited upon the lungs and other tissues the albuminous tumors called tubercles.

Here is found the cause of that peculiar smallness of bone and muscle, and thinness and tallness of person, so peculiar to consumptives. The absorbents, under the power of a very active nervous system, take down "the house we live in" faster than the nutritive arteries, confused by the motion around them, can effect its reconstruction. It is simply an unbalancing of the antagonistic forces, which build and pull down our earthly tenement. The men that demolish are more numerous and better fed than the artisan builders.

It is this destructively nervous force which gives to consumptive persons their proverbial mental activity; which causes them often to dazzle the world with the splendor of their gifts, and to bless their friends with the warmth of their affections. They are usually the *choice spirits*, the idols of their relatives, and the favorites of the community in which they live. Their mental movements, and the exercise of their affections, are characterized by brilliancy and warmth. Of all persons, they are best fitted to enjoy life, and to impart happiness. Loving all, they are by all loved in return. They are specimens of partially etherealized humanity, stepping lightly across the earth, to whom friends passionately stretch out their arms, and embrace — their shadows!

These views will appear the more reasonable, if we consider that in children the vegetative power is very active, while the nervous energy is comparatively weak. The preponderance of the former over the latter causes the rapid growth of children. The little arterial builders work faster than the lymphatic demolishers. This explains why so few children die of consumption.

But from the age of seventeen to thirty-five, when the vegetative power is losing something of its extraordinary activity, and the nervous force is showing its highest capabilities, — then it is, as this theory indicates, that tubercular consumption does its dreadful work, — then, that the outward whirl of this physiological Maelstrom casts upon the shores of mortality so many thinned, exhausted, and lifeless human forms. More than three fourths of all who sink under this disorder die between the ages just named. The brain, between these points of time, acquires its full size and force.

This disease prevails most, too, in those countries where an enlightened civilization gives to the nervous system its fullest development, as in Great Britain, France, and the United States, and in those where the nutritive process is most retarded by a relaxing climate; and it is carcely known among those people who are but little enlightened and have small brains, and among those who live in high and invigorating latitudes. As the most enlightened, however, are generally found in temperate climates, and those with the least cultivated brains in low latitudes, the rule is not perfectly explained by facts; yet it shows itself sufficiently to establish its validity, and to afford another proof of my theory.

Bronchial Consumption.

The persons exposed to bronchial consumption are generally of an opposite habit to those described above, — having the nervous force, in health, well subordinated to the vegetative, the assimilation good, and the blood well supplied with red globules. They have usually a full habit and an active circulation. The absorbents, and other vessels in the lungs, working in the midst of a large amount of caloric evolved by an energetic respiration, often take cold, which brings on lung fever and pleurisy, and these lay the foundation for the ultimate destruction of the lungs. For the same reason, the skin of this class of persons becomes diseased, and more often the inner skin, or mucous membrane, and most often that portion of mucous membrane which goes down into the lungs and lines the air tubes. It is inflammation of this which constitutes bronchitis, and which lays the foundation for true bronchial consumption.

As that class of persons who are exposed to the tubercular form of the disease suffer a general loss of carburetted hydrogen in its several forms, colliquative diarrhœa, sweats, increased breathing, and all conditions that carry fat out of the system, so those who suffer from attacks of the bronchial type of the disorder are generally afflicted with the opposite condition. They have too much carbon.

It is well ascertained that carburetted hydrogen, accumulated in the system, acts as a poison. And that class of bilious persons who are subject to this disease often have their *excretions* badly performed. For this reason, carbonaceous compounds accumulate in the system, and give rise to the symptoms of morbid poison circulating in the blood. This led Dr. Madden to suspect the presence of such poison in the blood of all consumptive persons. He saw the evidence of it in numerous cases, and not distinguishing the one class from the other, he inferred its presence in all.

Constitutional Difference.

The constitutional difference between the two forms of consumption appears to be this: the tubercular type is usually attended, in its origin, by a tolerably good state of the digestive function, in connection with bad assimilation; while the bronchial form generally has its foundation laid in connection with bad digestion, accompanied with healthful assimilation. In the former case, the food is well digested, the pabulum is properly prepared, but the nutritive arteries do not use it for renewing the tissues. In the latter case, the digestion is bad, the pabulum poorly elaborated; but the re-constructive vessels, under the control of a well-developed system of organic nerves, use it to the best advantage. In the one case there are good brick-*makers*, and lazy brick-*layers;* in the other, the reverse.

It happens, however, that before the fatal close of the disease, tubercular patients usually become afflicted, more or less, with bad digestion, and bronchial patients with defective assimilation; so that,

in the end, they present us with much the same class of symptoms. Starting from opposite poles in life's celestial sphere, they meet at the culminating point of death, and disappear under identical aspects of the heavens.

Exciting Causes of Tubercular Consumption.

The preponderance of the nervous force being the state which predisposes to disease, whatever unduly excites the nervous energy invites an attack.

These causes relate, mostly, to the *prolonged exercise of the intellect, the passions, and the sentiments.*

Few are aware of the mischief done by excessive stimulation of the mind during the most active period of life, — especially if the muscular system be left half developed. Here is where ambitious students commit great errors.

The constant plying of the mental powers, in the present modes of educating children, leads to a dreadful abridgment of human life. Better to train the bodily powers first, and let the mental culture come in later time. He who would build a lasting structure must lay a solid foundation.

The age in which we live abounds in the causes of excitement. The world is trembling with excess of mental life. The pine trees burned by the steam engine are scarcely more numerous than the human constitutions consumed by the train of thought it has set on fire.

Nor are the passions and sentiments less exercised, or less destructive.

Briefly, the causes of consumption embrace all those things which bring a destructive force against the digestive and assimilative functions, as insufficient and improper food, debaucheries, night-watches, sedentary habits, anxiety of mind, etc.; and those which act injuriously upon the breathing organs, as impure air, inflammation of the lungs, pleurisy, measles, hooping cough, etc.; and such as disturb the sweating process, as insufficient clothing, sudden changes of temperature, sleeping in damp sheets, etc. These exalt the nervous force, or depress the vegetative, or inflame the mucous lining of the air tubes, or the substance of the lungs, or the membranous sack which encloses them, so as to induce one form or other of consumption on the principles I have explained.

Can Consumption be Cured? — In many cases it can. It may be cured, first, by the absorption of the tubercles. The celebrated John Hunter shows, in his work on the blood, that the absorbent vessels have a sort of *elective affinity*, by which they take up and remove "all adventitious new matter, as tumors," (tubercles are albuminous tumors,) more easily "than those parts which were originally formed." Were this not so, an activity in these vessels equal to the removal of tubercles, would cause them to waste all the tissues, and aggravate rather than cure consumption. Probably this does occur where proper hygienic means are not used to quicken the excretions. This

hygienic treatment, to be spoken of hereafter, is not generally employed, — certainly not as effectually as it should be. Here is the source of Laennec's fatal remark, so often quoted and so widely endorsed, that "nature's efforts towards effecting a cure *are injurious*, and those of art are useless." Laennec's position cannot be true, if Hunter's statement is correct. If the absorbents, by an elective instinct, take up adventitious matter rather than the natural tissues, then the reason why they reverse this rule in consumption is, that by a weakened state of the constitution, the ultimate particles *are not well put together*, and are more easily taken apart than those of the adventitious tubercular tumors; and if we would restore these vessels to their natural activity, we must improve assimilation, and knit the unloving molecules into a firmer brotherhood. We must make the flesh *hard*, so that the absorbents cannot pick it to pieces. Do this, and "nature's efforts to effect a cure," will *not* "be injurious."

A second form of cure is the reëstablishment of the assimilative function, the building up of the general health, the arresting of the tubercular deposit, the reducing of tubercles already formed to an indolent state; and then, by a strict observance of the laws of health, keeping them in that condition through life.

A third mode of cure is the healing of the cavities after the tubercles have softened, broken down, and been expelled in the form of expectoration.

A fourth method of cure is a change of tubercles to calcareous matter. These *calcareous* tubercles, Laennec says, "are consequent to tuberculous affections *that have been cured*." And Andral, at one time, hoped to learn how to effect cures by changing tubercles to "the calcareous phosphate."

I have had several cases of cure by this last method, and have quite a collection of calcareous substances which my patients have coughed up, — one of which was raised in my presence by a lady who was a few years before in hopeless consumption, but is now in good health.

Treatment. — This should be of two kinds, local and general.

The local treatment of consumption is by the inhalation of vapors and powders into the lungs. It has been practised, more or less, by individuals, for many years, particularly in Europe; but for some unaccountable reason, the profession generally have never used it, and do not know much about it. I had the honor, some years ago, to bring it freshly before the American public, in some articles written for popular reading, since which time it has been rapidly gaining public confidence, and is now attracting much attention. Conveying the remedy directly to the diseased parts, it strikes the common-sense mind as eminently reasonable and necessary.

I shall speak of inhalation, therefore, very earnestly, not as a palliative of consumption only, but as far more, as a remedy. After long and patient use, my experience allows me to say, that I know it, in many cases, to be such; and knowing this, I should be criminal not to press it upon the public; for it is the great multitude of sufferers,

pressing fast through the gate of death, who need to hear words of hope.

Consumption a General Disease. — It is not denied that consumption is a general disease, needing constitutional treatment; but it has also a local development in the lungs, first in the form of albuminous tumors, called tubercles, and then, after the softening, breaking down, and discharge of these, in the more formidable shape of ulcerous cavities, which, beginning at the summit, devour the lungs down to the base. Can it be reasonable to apply no remedy directly to this local disease? Not so does our profession deal with other local diseases. To an inflamed skin we apply poultices, cold compresses, solutions of acetate of lead, nitrate of silver, etc.; to leprous or scaly affections, sulphuret of potash, bichloride of mercury, zinc ointment, nitrate of mercury ointment, sulphur, creosote, etc.; to weak and inflamed eyes, sulphate of copper, sulphate of zinc, nitrate of silver, and opium; to chronic ulcers upon the skin, tannin, pulverized rhubarb, opium, or cinchona; and to an inflamed throat, nitrate of silver and other articles. These are but specimens of the thousand cases in which we use local remedies. Why, then, when the mucous membrane, which lines the air tubes, becomes inflamed through all its branches, should we neglect, by the inhalation of medicated vapor, to apply a remedy directly upon the whole inflamed surface? Why, when tubercular matter is beginning to be deposited upon the surface of the air cells, and of the small bronchial tubes, should not the vapor go right to those parts, and cause, as it would, the immediate expulsion of this offending and dangerous matter?

Uneducated common sense sees the reasonableness of these suggestions at a glance. Many a person, with pulmonary disease, dies of suffocation, not because there is not muscular strength to expel the matter which is strangling him, but because the lungs *below* the large pellets of mucus, which plug up the bronchial tubes, cannot be inflated, and have therefore no means of driving out the offending substance. Yet a proper medicated vapor, drawn in with the breath, would either dissolve the mucus, or rouse up the expiring membrane to cast it off.

If the reader were to place one end of a stethoscope directly over the disease upon the breast of a person in the third stage of consumption, and should then ask him to talk, the words spoken would seem to rise up through the instrument, and enter, well articulated, into his ear. This, in technical language, is called *pectoriloquy*, — a word signifying *chest-talking*. It implies a *cavity* in the lung. If now the patient be asked to *cough*, a gurgling and splashing sound will be heard. This denotes that the cavity is partly filled with fluid, which is dashed about by the air explosively driven through it by the portion of lung below. Here we have an excavated ulcer, with all its filthy contents, composed of pus, mucus, serum, and dissolved tubercles, lying in it day and night to aggravate its unhealthy condition. What more reasonable, what more necessary, than that a soothing, alterative, or astringent vapor should be drawn into this cavity, to cause its

sides to heal, and its absorbents to remove this fluid? A surgeon who should permit an ulcer upon the surface of the body to remain in that condition without a local dressing, would be deemed unfit to practise his profession.

Both in tubercular disease and in simple bronchitis, the bronchial tubes almost aways suffer some physical change. The mucous membrane lining these tubes is generally softened. At other times the tubes become enlarged through their whole length, so that many of them, from the size of a quill, reach the bigness of the finger of a glove. In still other cases, the straining produced by coughing causes a tube to belly out at some point, forming a sack, which is generally filled with mucus or purulent matter. At still other times, a tubercle will press against a tube so as to flatten it and convert it into a musical instrument, the air, as it is drawn laboriously through, producing a high or low note, according to the size of the pipe. These physical changes are all produced by causes which the inhalation of a suitable vapor, at the proper time, would almost infallibly remove. How strange that this remedy, — so simple, so effectual, so easily comprehended, — should have been so little used!

Right at this vital point in the lungs, where the blood runs in a ceaseless current, — where the whole of it goes *every two minutes* to renew its vitality by contact with atmospheric air, — we have, in thousands of cases daily occurring, inflammation with roughening or softening of membrane, with its consequent harsh breathing; we have mucus, tough or glairy, to impede and interrupt respiration; we have tubercles in the hard or soft state, adding to the general embarrassment, and not only lessening the vitality of the blood, but disturbing all the sympathies of the system; — and yet the practice has been, and is, to attack these central disturbers of life only through the circuitous path of the stomach, lacteals, etc.

Since 1849, my undivided attention has been given to the study and application of this mode of treatment. This is two years in advance of any other physician in this country. I have investigated faithfully the effects of the various substances proposed for inhalation by European physicians, and have explored a wide field of new remedies, not before used, several of which have proved to have qualities of great remedial power.

Thus much I have thought it proper to say in behalf of this mode of treating consumption, the most successful yet employed, not because it needs defence, but because the great body of the profession are ignorant of it, and what is worse, are indifferent.

The chief remedies I employ for inhalation are the following:

Alterative Inhalant, composed of iodine, six grains; iodide of potassium, twelve grains; tincture of ipecac, one ounce; tincture of balsam of tolu, six drams; ethereal tincture of conium, one and a half drams; alcohol, half a pint. These are to be mixed. The dose is one to two teaspoonfuls, to be inhaled ten or fifteen minutes, in about a gill of hot water.

The ethereal tincture of conium is made by keeping a dram of powdered conium in one ounce of sulphuric ether a week.

The above inhalant is used in the tubercular forms of consumption, particularly that of the scrofulous kind, and in many cases of bronchitis.

Expectorant Inhalant. — Take pleurisy root, half an ounce; squill, one ounce; ipecac, two drams; black cohosh, two ounces; queen's root, one ounce and a half; American hellebore, two drams; diluted alcohol, one pint. Grind the roots, etc., and add the alcohol. Let the whole stand one week, shaking or stirring daily. Draw off and filter through paper. Two teaspoonfuls make a dose, to be inhaled same as preceding.

This is to be used when the cough is hard and dry, and the expectoration difficult. It makes the raising easy, lessening the soreness of the chest, and the harshness of the cough.

Soothing, Febrifuge Inhalant. — Take belladonna leaves, half an ounce; black cohosh, two ounces; American hellebore, half an ounce; poke root, two drams; aconite root, one ounce; diluted alcohol, one pint. Grind the roots, etc.; add the alcohol. Let the whole stand one week, stirring daily. Pour off, and filter through paper. Dose, one to two teaspoonfuls, to be inhaled as the preceding.

This is excellent in all cases where the skin is hot, the pulse quick, the tongue and mouth parched, the chest sore, and the system suffering during the whole or a part of each day, from a general feverish condition. It is proper in all the forms of chest disease.

Astringent Inhalant. — Take of wild indigo, one ounce; catechu, half an ounce; Peruvian bark, one ounce; golden seal, one ounce; diluted alcohol, one pint. Mix, and let the whole stand one week, stirring daily. Drain off, and filter through paper. Add two drams of creosote. One to two teaspoonfuls to be inhaled as preceding.

This is to be used when the expectoration is profuse and easy, unattended by fever, either in the latter stages of chronic bronchitis, when the mucous membrane of the tubes is in a relaxed condition, or, in the third stage of tubercular disease, for the purpose of constringing, cleansing, strengthening, and healing.

Antiseptic Inhalant. — Take wild indigo, one ounce; belladonna leaves, half an ounce; diluted alcohol, one pint. Mix, and let the whole stand one week. Pour off, and filter through paper. Then add solution of chloride of soda two ounces. Dose, one to two teaspoonfuls, to be inhaled as the preceding.

This is used in cases of gangrene of the lungs, generally distinguished by considerable expectoration having a very fetid smell.

Anti-Hemorrhagic Inhalant. — Take witch-hazel bark, two ounces; black cohosh, four ounces. Grind, and add one pint of diluted alcohol. Let the mixture stand one week, stirring daily. Pour off, and filter through paper. Add to this two drams of creosote. Dose, one to three teaspoonfuls, to be inhaled as preceding.

This is an excellent remedy for bleeding from the lungs. When there is a tendency to bleed, it should be used for a long time. It may frequently take the place of No. 4, as an astringent inhalant.

Object of Inhalants. — Being vaporized and inhaled, these articles enter every air cell throughout the lungs. Their object is to soothe and mollify inflamed mucous surfaces, to reduce enlarged bronchial glands which press upon neighboring parts and cause bleeding, to stimulate the absorbents to take up and remove tubercles, to dissolve tubercles out of the pulmonary tissue, to cause ulcerous cavities to expel their mattery contents, and to stimulate their sides to take on a healing process. They should be used from three to six times a day, the inhalation continuing from ten to fifteen minutes.

Other Inhalants. — Great numbers of other articles have been used, which I have not space to describe. I will mention, however, that the following are sometimes employed with advantage:

For an Expectorant Inhalant, take alcohol, four ounces; tincture of camphor, half an ounce; tincture of tolu, two drams; naphtha, one dram; benzoic acid, thirty grains; oil of bitter almonds, four drops. Mix.

For an Anodyne Inhalant, take alcohol, four ounces; naphtha, one dram; benzoic acid, thirty grains; chloroform, twenty-five drops; tincture of henbane, half an ounce. Mix.

For an Astringent Inhalant, take alcohol, four ounces; naphtha, one dram; benzoic acid, thirty grains; chloroform, one dram; tannin, eight grains. Mix.

Mode of Inhaling. — For inhaling these, a sponge is fitted into a glass cup, to which a flexible tube is attached. A small quantity of the mixture is poured upon the sponge, and the vapor arising, is drawn into the lungs through the tube.

To the expectorant inhalant may be added, occasionally, half a dram of nitric acid.

These latter formulas are the principal ones used by those who practise what is called *cold inhalation.*

Medicated-Vapor Inhaler. — This instrument I have had constructed of britannia (sometimes of silver) and glass. Some have adopted the mode of inhaling from a sponge held in the hand, which is an imperfect method; others, that of inhaling from a sponge fastened upon the chest, which amounts to scarcely any inhalation at all, as only a very small amount of the vapor reaches the nostrils. It is, moreover, disagreeable to the wearer and to those around, and must soon become extremely filthy.

FIG. 91.

Some use a glass bottle, with an India-rubber tube; but India-rubber soon becomes foul internally, and might produce disease. Avoid Inhalers with India-rubber tubes.

The cut 91 represents the instrument I employ. The tube, to which the mouth is applied, passes through the cap, communicating with the air above the fluid. When the air is drawn off, other air rushes into the long tube to fill the vacuum, and breaking out at the bottom, sets

the fluid in commotion, causing a medicated vapor to rise, which is drawn into the lungs.

Constitutional Treatment. — The rapid breathing in consumption, creates too much oxydation of the blood, — so much, that the muscles, especially the heart, are usually *of a bright red.* To prevent the patient from being literally burned up by oxygen, the blood must be de-oxydated as fast as possible.

While there is too much of oxygen, there is, at the same time, a deficiency of carbon. Hence the cold hands and feet, and the general inability to bear frosty weather. The little nutritive arteries, in these thin-blooded persons, stand shivering and torpid with cold, unable to perform their allotted function of nutrition. There is not fire enough, and fuel must be had in the form of carbon. Hence one of the advantages of *cod liver oil.* This oil, too, as carbon, devours the oxygen of the blood, and prevents *its* destroying the patient. This idea also explains the fact mentioned by Bennet and others, that in their post-mortems, they found the evidences of healed ulcers in numerous persons who had been *spirit-drinkers* while living. And Liebig helps the explanation by saying that alcohol, taken into the system, circulates in a free state in the blood, and devours its oxygen. To which I beg to add, that the *malaria* of intermittent and bilious fever districts, has been pretty satisfactorily proved to be an instable organic body, consisting of sulphur, carbon, and hydrogen, all of which have an affinity for oxygen, and devour it in the system. Consumption is not found in such districts.

As I am here treating of the chemical effects of remedies (and to this test, most remedies must finally come), I will mention that tartrate of antimony and potassa *arrests the circulation in the pulmonary arteries,* — which fact gives a complete and luminous view of its power to prevent oxydation. But I am obliged to detract from its merits, by stating that it *also* retards the circulation in the capillaries of the system generally, and so hinders *de*-oxydation.

Phosphorus. — There is an article which has more recently presented itself to the notice of the profession, to which I wish to invite special attention. I refer to phosphorus. This agent, for a time, challenged our notice in the shape of *phosphate of lime;* but we could never feel sure that this article was dissolved in the fluids of the body. We now use, and with far more marked effect, the hypo-phosphites of lime, soda, potash, and iron. These are used in the form of the syrup of the hypo-phosphites. The dose is a teaspoonful before each meal. The effect upon the tubercular disease is immediate and gratifying.

Need of Phosphorus. — Cerebric acid contains nitrogen and phosphorus, and is the peculiar component of the brain and nervous system. By combustion and the changes of oxydation in the brain, the phosphorus of cerebric acid is converted into phosphoric acid; so that every act of the brain produces phosphoric acid. How rapid, then, must be the consumption of the phosphoric element of the cerebric

acid, in that highly active and excitable state of the nervous system which I have described as peculiar to consumption. And how necessary in order to save the brain from destruction, to meet this increased demand for phosphorus, by introducing it into the system.

Mulder regards the fibrin of the blood as the *carrier of oxygen;* and by this oxydation, the fibrin becomes converted into the binoxide and tritoxide of proteine, — its phosphorus and sulphur (for it contains both), being converted into phosphoric and sulphuric acids. Adding phosphorus and sulphur, therefore, as medicinal agents, would seem to be the proper way to supply the fibrin with materials destructive of its freight of oxygen.

It is well known that the salts of phosphoric acid are essential for the formation of azotic compounds, — compounds which are necessary to sustain animal life. It should be remembered, too, as collaterally illustrating this fact, that the tribasic phosphates of potash, soda, lime, and magnesia, play an important part in the growth and perfection of plants. They are always found in the seeds of the cerealia, and no mature grains are produced where phosphates are absent from the soil. For the production of abundant grain crops, it is necessary that these salts should exist in the soil, or be applied to it in manures.

It is known, moreover, that in all chronic diseases distinguished by wasting of the tissues, a much larger quantity of phosphates is excreted by the kidneys, than in the normal state. Hence there is no healthful growth; and the human organism, like the soil, exhausted of its phosphates by successive croppings, brings nothing to perfection, and needs to have its drained salts re-supplied.

I cannot but call attention here to the inorganic substances found in healthy human blood. According to very careful analyses, by Scmidt:

1000 parts of blood-corpuscles, contain:		1000 parts of liquor sanguinis (serum and fibrin), contain:	
Chlorine,	1.686	Chlorine,	3.664
Sulphuric Acid,	0.066	Sulphuric Acid,	0.115
Phosphoric Acid,	1.134	Phosphoric Acid,	0.191
Potassium,	3.328	Potassium,	0.323
Sodium,	1.052	Sodium,	3.341
Oxygen,	0.667	Oxygen,	0.403
Phosphate of Lime,	0.114	Phosphate of Lime,	0.311
Phosphate of Magnesia,	0.073	Phosphate of Magnesia,	0.221

Iron is omitted. Now, I venture the prediction, that out of these figures, mainly, in connection with those which represent the constituents of the saliva, the bile, the gastric juice, the pancreatic secretion, and the organic compounds of the blood and tissues, are to be evolved within a few years, a correct and partially demonstrative system of medication. In consumption, all the inorganic bodies represented by the above figures, with the exception of oxygen, are deficient in quantity. By reflecting upon the proportions of these several bodies, particularly upon the large amount of chlorine and soda in the plasma, and of potassium in the corpuscles, the mind can hardly fail to obtain useful hints. I have not hesitated to make one of these hints the

ground of a very free use of alkalies, — particularly in the form of bathing.

Sugar of Milk. — There is one other medicinal article which I deem worthy to be made prominent, and to be placed side by side with cod liver oil and the hypo-phosphites. I refer to *sugar of milk.* It belongs to that class of non-nitrogenized articles which Liebig has denominated supporters of respiration. Its great affinity for oxygen is well worthy to be taken into the account, in considering its value in consumption. So great is this attraction, that with ammonia and other alkalies, it has the power of reducing some of the metalic oxides. When taken into the stomach, it is rapidly absorbed into the blood, which, being an alkaline fluid, augments its great de-oxydating power to a considerable degree. It unites rapidly with oxygen after entering the blood, forming carbonic acid and water. A part of it, however, does not enter the blood in an uncompounded state, but is changed in the stomach into lactic acid; and this, in the blood, becomes an alkaline lactate. But the portion thus changed, appears also very useful; for Lehmann says: "We know of no substances which could better act in the blood as food for the respiration, than the alkaline lactates."

Corroborative of these views, is the fact that all those kinds of milk, such as goat's, ass's, etc., which contain the largest amount of sugar of milk, have at different times, and in various countries, obtained a reputation for curing consumption. Goat's whey, in which this article abounds, and from which it is largely manufactured, has been celebrated for its virtues in this line. Ancel speaks of it as an excellent remedy; and Pereira says, "Sugar of milk, in consumptive cases and chronic diseases of the digestive organs, is a most valuable aliment."

One of the best forms of taking sugar of milk is that of a gruel, which is quite palatable, and may be freely eaten by consumptive persons.

The Cough. — The best article I have ever used for this, is the "Pulmonic Cherry Cordial." I was five years in compounding this article to suit me, and I believe it to be the very best cough preparation ever made. Dose, from one to two teaspoonfuls. See page 710.

When a more quieting effect is needed, a little morphine may be added to this preparation; if a more expectorant influence is required, add a few drops of the tincture of veratrum viride. For the great majority of cases, it will be found to be right without any addition. When this is not at hand, any of the preparations (108) (112) (109) (113) (110), etc., may be used.

Night Sweats. — The very best preparation for these sweats, is a compound of the oxide of zinc, one dram; extract of conium, half a dram; to be made into twenty pills, of which one or two are to be taken every night. The sponge bath also does much to check these sweats.

Diarrhœa. — This is a most exhausting symptom in the latter stages of consumption. The only remedy which has much effect in controlling it, is the *tris-nitrate of bismuth.* This should be given in doses of

thirty grains immediately after, or at the time of each meal. These doses are much larger than used to be given; but they will do no harm. Given to this extent, I find the bismuth very effectual.

Iron. — This preparation, in some of its forms (316) (73) (61) (84) (102), is almost always needed in consumption. If the scrofulous habit be strongly marked, give syrup of iodide of iron, in thirty-drop doses, three times a day. It should be taken in a glass of water.

External Irritants. — These are needed where there is much inflammation and soreness of the chest. Blisters should very seldom be used. Croton oil, from two to half a dozen drops, rubbed over the sore part, generally answers very well. Sometimes the mustard paste, applied to the extent of producing redness, two or three times a week is sufficient. Nitric acid, reduced with water to a strength a little above the strongest vinegar, answers a good purpose for keeping up an irritation.

Atmospheric Inhalation. — It has been said by Laennec and others, that asthma has sometimes the effect of arresting tubercular consumption. Dr. Ramadge thought this was effected by an expansion of the vesicular structure of the lungs; and he reasoned that the same expansion by mechanical means, would secure a similar end. To effect this, he made his patients take long breaths through a tube constructed for the purpose.

It is manifest that the philosophy of atmospheric inhalation was not understood by Dr. Ramadge, nor has it been by any of his followers in this country.

Rokitansky thinks the tubercular habit depends upon the excess of fibrin in the blood; and says that the reason of consumption being arrested by pregnancy is, that this condition offers a mechanical obstacle to the transmission of blood through the lungs, — thus preventing its excessive oxydation, and keeping it in a venous state. This destroys the fibrinous condition, on which he thinks tuberculosis depends.

Now this is precisely what is done by atmospheric inhalation. The trachea divides on its entrance into the lungs, into two branches, which again divide and subdivide until the tubes become smaller than can be seen, each terminating in a minute air-cell. Over this entire surface the air is intended to be brought into communication with the blood for the purpose of oxydating it. By forcible inhalation, the air vesicles are inflated to the extent of their capacity, by which means the extreme branches of the pulmonary arteries are so flattened between these extended cells, as to be able to convey but a small amount of blood, and but little is oxydated. This furnishes a mechanical obstruction to the transmission of the blood, and secures the defibrination of which Rokitansky speaks.

This is my view of the philosphy of atmospheric inhalation. The benefit results, not from a larger amount of oxydation, as is generally supposed, but from a smaller. Asthma does the same thing by producing spasmodic contraction of the extreme bronchial tubes, and preventing air from entering the cells.

The same end is gained in part by certain kinds of employment, as glass-blowing, playing upon wind instruments, and the like. Writers of distinction mention cases of recovery from incipient consumption by a vigorous use of the lungs in singing. Dentists subject their lungs to a similar process of expansion in the use of the blow-pipe; the writer has known several instances in that profession, in which recoveries have taken place.

The Conclusion to which I come is, that atmospheric inhalation may be used with great advantage in some cases, but should never be resorted to except under the direction of a competent physician. In a congested state of the lungs, with hæmorrhagic tendencies, or with inflammation and soreness, it is well fitted to produce fatal bleeding, and is of course dangerous.

External Use of Water. — As a relaxation from severe exertions, the ancients had frequent recourse to bathing. Those who contended in the race, throwing the javelin, and wrestling, at Rome, plunged into the Tiber while warm and panting with their efforts. That this promoted prowess and physical endurance, none can doubt.

Louis, the great French authority on pulmonary diseases, lays down several rules to be observed by consumptive patients, and particularly mentions cold bathing.

Few things give tone to the capillaries of the skin like cold water, systematically applied. It rallies the powers of the constitution, and improves assimilation. And by it another object is gained of scarcely less importance, — that of guarding the system against taking cold. Those in the daily habit of applying cold water to the whole person, seldom suffer from colds and catarrhs; and they generally become hardened so as to endure the assaults of the elements.

Consumptive persons should generally use the *sponge* bath, with cold water, if it can be endured, otherwise the tepid bath, to be followed, in all cases with brisk rubbing, with a coarse towel. If a sense of chilliness and discomfort follows the bath, a large portion of the water must be squeezed from the sponge, so as to use but very little, and the washing must be speedy, and the rubbing more lively than usual, — beginning with tepid water, and gradually lowering the temperature, till it can be borne cold. A large teaspoonful of saleratus to each quart of water should be used.

Diet.

The diet, like all other parts of the treatment, must have reference to the *present condition* of the patient. If the disease take the bronchial form, and rapid breathing, and other conditions calculated to carry fat out of the system have not yet supervented; or if the patient have thirst and hectic, the diet must be spare and simple, — consisting chiefly of milk and farinaceous substances.

But in all cases where the disease is tubercular, or, being bronchial, has reached the stage of emaciation, the very earliest moment at which the fever can be subdued, should be improved to build up the

patient with a generous diet. I have seen cases where the stuffing sometimes resorted to for fattening turkies for Thanksgiving, would seem to be almost justifiable. A good rule is to give the most generous diet that can be taken without disturbing the stomach, or increasing the feverish symptoms. Animal food, with a good quantity of salt, should be freely taken. Fat meats, if well received by the stomach (and they generally are if taken *cold*), are particularly useful. The same is true of sweet butter and cream.

Out-Door Exercise. — Without exercise, as a general thing, the consumptive patient will die. Exercise involves muscular exertion, which is attended by the tension, compression, and greater compactness of the muscles used. This compression of the muscles within the sheaths (fasciæ) which enclose them, sends out their blood, and pushes it forward towards the surface. Reaching the extremities of the arteries, the blood passes through capillary tubes, almost inconceivably fine, into the capillary veins of similar fineness, whence it flows through larger and larger veins back to the heart. At the moment of its passage from the capillary arteries to the capillary veins, it ceases to be red or arterial, and becomes purple or venous blood. The oxygen in the arterial and the carbon in the venous blood unite, forming a literal combustion, just such as we produce in our stoves and grates by bringing together the carbon of the wood and the oxygen of the atmosphere. By this combustion our bodies are warmed, and the little secreting, exhalant, and other vessels, are raised to a temperature that enables them to work.

Every muscular contraction and compression helps push along the venous blood in larger quantities to the right auricle of the heart, which, receiving a fuller supply of its natural stimulus, contracts more energetically, forcing the fluid into the right ventricle. From thence it is expelled with increased energy likewise along its only pathway, the pulmonary artery, into the lungs. Rushing in here in greater volume than natural, a demand is made for deeper inspirations of air to vitalize and fit it for its descent by the pulmonary vein, to the left auricle. Coming here also as the natural stimulus, in larger quantities than usual, it gives increased energy to its own propulsion into the left ventricle, from whence it is driven out through the arteries to all parts of the system, by the powerful strokes of that strong muscle.

Thus it goes its round, urged on by exercise, parting with its oxygen more and more freely in the capillaries, giving more activity to the vessels of the skin and other tissues, increasing the depth and strength of breathing by carrying more venous blood to the lungs; improving the digestion, carrying a better elaborated pabulum to the nutrient arteries, and causing them to work it up more diligently in renewing the tissues.

Nor is this all. Every wrench of a muscle forces some old, worn out particles from their places, allowing none to remain except such as are firm, and able to bear the brunt of exertion. The flesh of those who exercise much becomes hard and enduring.

I say then to the consumptive, if you would live and not die, exercise, *exercise*, EXERCISE. It is the first, second, and third thing. If you ask for the modes of exercise, I say take it on foot, out of door, every day, to the extent of a small amount of fatigue. Don't be frightened by a single cloud, or even by a cohort of them. You have as good a right to be out as the clouds; and they will not look more angry, but rather more agreeable from finding you abroad in their company. The elements of nature are at war with organic life. Against them the vital principle has to maintain a perpetual struggle; and he who loses the power to meet and gain the victory over them by out-door exercise, is beginning to die.

Go abroad, therefore, often. Try it again and again. Extend your walk a little every day. Stretch it out to the distant fields. Gather flowers from the top of the hills and from the bosom of the vallies, and bring them home as trophies of your victory.

If not able to begin with walking, ride as often as possible in a carriage. The jolting of a vehicle will jog the blood along much better than no exercise.

Horseback riding is still better. It combines, in some measure, the passive exercise of carriage riding, with the active exertion of walking on foot.

Numerous other modes of exercise may be resorted to with advantages. Dumb-bells, adapted in size to the strength of the patient, and used with caution, are highly serviceable. The battledoor, the foot-ball, jumping the rope, pitching quoits, and the athletic sports of the gymnasium, all have their appropriate place. The greater the variety the better, as by it all parts of the system are brought into play, and both the mind and the muscles get the change which they need.

It is hard to impress patients with the importance of this subject. Say what you will, they somehow or other get the idea that a moderate amount of exercise, taken when they feel like it, is all that is required. Fatal mistake! Whatever the physician may do, the patient has a great deal to do for himself. He must strive to develop his physical powers to the utmost. He must train himself as runners and fighters do when preparing for their surprising feats; for he is running against the swiftest disease (or the surest winner) of our climate, and fighting with the elements.

If he regards life as not worth this exertion, of course he will not make it; but I beg him to consider that without it, recovery will be uncertain, and in many cases, impossible. Do as I have directed, and if your medical attendant is skilful, the current of health will, in many cases, begin to flow back to you. Life will renew to you its policy of insurance, and multiply your days.

Travelling. — Consumptive patients have generally been sent to a southern climate. But where the case involves dyspepsia and affections of the liver, low latitudes are generally unfriendly. Liver complaints are the bane of a southern climate, and a sallow complexion is the inheritance of a southerner.

Tubercular persons, chilled by our northern climate, are sometimes

temporarily relieved by the warmer atmosphere of the south. But the relief is only temporary; for, having lost the power, as they imagine, to bear the frowns of our northern sky, they are dying, and will die anywhere unless they recover this power. And the way to retrieve a lost advantage over an enemy, is, not to retreat to a point where recovery will be harder, but to meet him at once. If the constitution cannot bear up against an enemy under the bracing of a northern atmosphere, it will be still harder to do so under the wilting of a southern.

After all, the objects aimed at should be *change* and *travelling*. The exercise involved, the constant exertion required in getting from place to place, the agreeable sensations produced by the motion of cars and steamboats, the ever varying change of sights and sounds, and the constantly increasing stock of one's ideas of men and things, — these are what rally the constitution, and open anew the springs of life.

Especially should all journeys for health be taken, if possible, with an object in view. Let the consumptive start with the view of seeing the cave of Kentucky, the prairies of the West, the great lakes of the North, the falls of Niagara, the fortress of Quebec, the Saguenay river, the doctor, who he has reason to think will cure him, — *anything* which he is willing to make exertion to see, and that he is sure his eyes will rejoice in beholding.

I have thus spoken of consumption more at large than of other complaints, because it is the great disease of the world, and is increasing with the advancement of civilization.

Acute Bronchitis.

This is an acute inflammation of the mucous membrane lining the air tubes in the lungs. It is generally quite a serious disease.

Physical Signs. — The sound upon percussion is generally good. If there be any dulness, it is commonly in the lower and back part of the chest.

The breathing murmurs are sometimes more, sometimes less intense than natural. Occasionally they are almost extinct.

In the early stage, sibilous and loud rattles.

In the more advanced stage, mucous rattle.

Now and then sub-crepitant rattle accompanies the inward-drawn breath.

General Symptoms. — The disease begins with chills followed by fever; tightness across the chest, difficulty of breathing, hoarseness, loss of strength, costive bowels, and a quick and hard pulse. Water runs from the eyes and nostrils, and there is a dry, harsh, croupy cough.

After a few days, mucous begins to be raised. This expectoration gradually becomes more copious, and is opaque, yellowish, or greenish, and occasionally streaked with blood. This mucus is very ropy, and adheres to the vessel.

There is more or less pain in the chest; pain across the forehead, which is increased by coughing; and a pale and anxious countenance.

In severe cases, the tightness across the chest is extreme, with a sense of suffocation, causing the patient to call for the opening of the windows. There is great difficulty of breathing; a paleness and lividity of the cheeks and lips; a loud wheezing and rattling in the throat, followed by cold sweat, insensibility and death.

In children the disease comes on like a common cold, attended by a sore throat, a great desire to drink, but a disinclination to take food. But two or three swallows of drink can be taken at a time for want of breath. The phlegm is frequently vomited up spontaneously.

Observations. — The loud and sibilous rattles are produced by similar causes, namely, the passage of air along tubes whose interior is dry and rough from inflammation, or whose calibre is contracted or altered in form by the swelling of the membrane, effusion upon its inner surface of a tough mucous substance, or a pressure upon its external surface of tubercles, swollen glands, aneurismal tumors, etc. The two sounds differ mainly in the key upon which they are pitched, — the sonorous, or low-keyed, coming from the larger tubes; the sibilous, or high-keyed, from the smaller, — just as the low notes of an organ come from the large pipes, and the high notes from the small ones.

The sibilous rattle has been compared to the chirping of birds, the squeaking of puppies, the whistling of air passing through a key-hole, etc.; the sonorous, to the snoring of a sleeping person, the cooing of doves, and the sound of the bass string of the violincello rubbed with the finger.

Causes. — It is generally brought on by a sudden cold, by changes of the weather, and by inhaling irritating substances. It is a secondary result, too, of scarlet fever, measles, small pox, hooping cough, and the remittent fever of infants.

Treatment. — In mild cases, give warm balm or flax-seed tea, hot lemonade, or other similar drinks, — at the same time, soaking the feet in hot water, and, on retiring to bed, apply bottles of hot water to the feet and sides, to produce sweating. If the bowels be costive, some gentle physic, as rhubarb and magnesia, or salts and senna, may be taken.

In the case of infants, an emetic of wine of ipecac, or compound tincture of lobelia, should be given, and followed with slippery elm and flax-seed tea. The compound tincture of lobelia, with tincture of veratrum viride, may be continued for a time as an expectorant.

In more severe cases, both of adults and children, an active emetic is required, — perhaps the compound powder of lobelia is as good as any. This must be followed with tincture of veratrum viride, in full doses, so as to reduce the pulse at once, and keep it down to the natural standard. This is one of the very best articles in this complaint, and will generally very much lessen its violence and duration.

If there is much difficulty of breathing, the air of the room must be kept moist, as recommended in croup.

The room should also be kept warm, — decidedly warmer than in the case of other fevers.

A gentle perspiration should be kept up by small doses of compound tincture of Virginia snake-root, and by frequently bathing the surface, or else by tincture of veratrum.

Mustard should be applied to the chest, and to the soles of the feet.

The cough may be managed by preparations (104) (106) (110), freely given.

The diet should be confined to barley-water, toast-water, apple-water, rice-water, and a solution of gum arabic.

Chronic Bronchitis.

This is an inflammation of the mucous membrane of the air-tubes, which continues a great length of time, without any sudden or remarkable changes.

Physical Signs. — The percussion-sounds are similar to those of acute bronchitis. When a bronchial tube is dilated, we sometimes have dulness around the dilated part.

The breathing murmur is always accompanied by a mucous, sonorous, or sibilant rattle, — sometimes by a subcrepitant.

When dilatation of the tubes exists, the intensity and duration of the sound of the ingoing breath is *decreased*, — of the outgoing *increased*.

In this state of the tubes, we also have cavernous breathing, bronchophony, sometimes pectoriloquy, and bronchial or cavernous cough.

General Symptoms. — A cough is generally present, which is increased in wet weather, and by every slight cold. This comes on in paroxysms; is generally worse in the morning; and is relieved by raising freely. The matter raised is generally yellowish, but sometimes whitish and sticky; and in the latter stages, is thick, and sometimes very much like that of consumption. Indeed, the disease often ends in bronchial consumption.

Remarks. — The breathing is bronchial or cavernous when the dilated portion of the tube is empty; — if it contain fluid, the mucous rattle will be heard.

Dulness on percussion will exist if a dilated tube press upon the surrounding portion of lung so as to condense or make it solid.

Dilatation of the tubes occurs only in chronic bronchitis of long standing. Its physical signs are much like those of a cavity in advanced consumption. The examiner may learn to distinguish them by considering that in consumption, *dulness precedes the cavity*, while in bronchial dilatations, the *cavity precedes dulness*.

The dilatation or swelling out at some point of a bronchial tube, is caused by obstructions to the passage of air through it, — just as an India-rubber tube, partially closed up at a given point, will bulge out

just in front of the obstructed place, when air is forcibly blown through it, and just as the left ventricle of the heart enlarges when the blood is obstructed in its passage through the aortic valve.

Causes. — It often occurs as the result of acute bronchitis, and also of measles, hooping-cough, etc. But taking cold, and damp and changeable weather, are more frequently its causes. It most often follows chronic inflammations of the throat, which, being neglected, gradually creep down the windpipe into the tubes, and become very obstinate in their character.

Treatment. — Medicinal inhalation is one of the best remedies for this complaint. The inhaling powder has, in many cases, great efficiency. The dose is about what can lie on a ten cent piece. It should be used once a day, in an instrument represented in the cut.

This instrument I had constructed in 1850. It consists mainly of a glass tube and a receiver, — the latter being something like a tube vial, pierced with fine holes around the lower end. The powder is poured into the receiver, which is placed in the larger tube, and twirled between the thumb and finger while inhaling.

Fig. 92.

[*Patented March* 16, 1852.]

When the powder cannot be easily got down into the tubes in the lungs, — as often happens, — the inhalation of medicated vapor will do better. If the expectoration be difficult, the expectorant inhalant, described under "consumption," should be used; if the expectoration be too profuse and free, the astringent inhalant must be taken.

The cough preparations recommended for consumption, also (113) (112), will be the proper ones in this complaint.

The daily alkaline bath, and brisk friction, are particularly serviceable.

Out-door exercise is almost as necessary in this disease as in consumption.

Enlargement of the Air Cells. — *Emphysema.*

This disease consists in enlargement of the air cells, the obliteration of their vessels, and the wasting of their walls.

Physical Signs. — Thumping upon the chest gives a clearer and louder sound than natural, — one which is tympanitic, or drum-head like.

The murmur of the ingoing breath is *diminished* both in duration and intensity, — of the outgoing breath, it is *increased.*

Dry, crepitant rattle attends the ingoing breath only; occasionally, sibilous rattle.

General Symptoms. — Habitual shortness of breath, and very great difficulty of breathing, occurring in paroxysms, which cause the patient to rush to the open window for air.

There is generally a cough, and the matter raised is frothy, liquid, and mucous, or watery.

The face has a peculiar dusky color, and the countenance an anxious, melancholy expression. The nostrils are thick, and the lower lip full. The muscles of the neck are large, and the gait of the patient is stooping. The strength is wasted in proportion to the difficulty of breathing.

Emphysema tends to produce disease of the heart, Bright's disease, and venous congestions in the head.

Observations. — The tympanitic sound is caused by the increased amount of air in the cells.

The air cells having lost their elasticity, the air, in a great degree, *remains in them*, — not passing in and out, — hence the absence of the vesicular murmur.

The crepitant rattle attends the ingoing breath only, and is supposed to arise from the expansion of lungs which are in a drier state than natural. It has been compared to the sound produced by blowing into a dried bladder.

Treatment. — To whatever extent the air-cells are destroyed, to that extent, of course, the disease is incurable. It may, however, be palliated and relieved to a great extent.

Generally, bronchitis exists in connection with emphysema; and when this is found to be case, the remedies for that disease must be employed.

The inhalation of tincture of stramonium, in one or two teaspoonful doses, the same as the alterative inhalant is used, will be useful.

To be taken internally, an excellent preparation may be made by uniting one dram of ethereal tincture of lobelia, with two drams of tincture of ipecac, and two ounces of ammoniac mixture. The dose is one to two tablespoonfuls. Half grain to grain doses of extract of cannabis indica, are excellent to relieve the difficulty of breathing.

The diet must be very carefully regulated, as overindulgence at the table aggravates the symptoms.

Change of air is often highly beneficial; but it is impossible to predict its effects beforehand in each individual case.

Swelling of the Lungs. — *Hypertrophy of the Lungs.*

This can hardly be regarded as a disease. It generally takes place in but one lung, and is the result of the inaction of the other. Thus, when one lung is diseased, the other has to do the work of both; and being overworked, it enlarges as the heart, or an arm does, when very much exercised.

The only treatment required is to eat sparingly, and exercise with great moderation, so as not to increase the rapidity of the breathing.

Pulmonary Apoplexy.

This is generally the result of a disease of the heart, particularly of the *mitral* valve.

Physical Signs. — Percussion yields a clear sound, except where the engorgement of blood is large, and near the surface, — in which case, it is dull.

The sound of breathing is feeble or absent over a limited space.

Bronchial breathing is heard in some places, and bronchophony in part, in the same regions.

Mucous rattle is also heard.

Observations. — In this disease the small air-tubes and air-cells are the seat of bleeding; and the blood becoming coagulated here, closes these vessels against the entrance of air. This explains the feebleness or absence of the breathing murmur.

The fluidity of blood in the immediate vicinity, gives rise to the mucous rattle.

General Symptoms. — These are, difficulty of breathing, tightness, and dull pain in the chest. The mucus raised is tinged or streaked with blood. The blood raised is darkish, and dirty-looking. This last symptom, the dirty look of the blood, is peculiar in this disease.

Treatment. — The most important remedy is dry-cupping upon the chest. This will often arrest the disease at once. Counter-irritation by croton oil is also useful. A free movement of the bowels by a preparation containing croton oil, or elaterium (31) (33), has an excellent effect.

Air in the Chest. — *Pneumothorax.*

This disease consists in the presence of air in the cavity of the pleura. Generally, there is also water in the pleural sac at the same time; the water, being the heavier fluid, occupying the lower part of the cavity, and the air the upper part.

Physical Signs. — Tympanitic or drum-like sound over the upper part of the side. Dull sound over the lower part. Breathing murmur diminished or suppressed. Amphoric breathing. Metallic tinkling.

General Symptoms. — Great oppression of the chest, and difficulty of breathing; generally attended by palpitation of the heart, and frequently by severe pain under the breast-bone, on the affected side. The patient generally has to remain in the sitting posture, and cannot lie an instant on the sound side.

If, on percussion, one side of the chest sounds louder than the other, and the breathing murmur is heard distinctly on the side which gives only a moderate sound, and is not heard at all on the loud-sounding side, we may be sure it is a case of air in the chest.

Observations. — The metallic tinkling is like the sound produced by dropping a pin's head into a metallic dish, or like the distant tinkling of a sheep-bell, or the gentle pulling of the string of a violin.

It is supposed that when the fluid in the cavity of the pleura happens to be higher than the orifice, the air, when it enters at each

in-drawn breath, forces its way up through the fluid, in the shape of bubbles, and, bursting at the surface, gives the tinkling sound. This sound is sometimes produced, too, by the falling of drops of liquid from the upper part of the cavity, upon the surface of the fluid.

The amphoric breathing is like the sound produced by blowing obliquely into an empty cask. One writer says he heard the same sound when out shooting in a rough day, produced by the wind blowing sideways into the gun-barrel.

Treatment. — I would recommend the use, two or three times a day, of the antiseptic inhalant, mentioned under the head of consumption.

To this should be added dry-cupping over the whole chest, which generally gives great relief. Blisters may also be used.

Sweating must be encouraged in the manner recommended under acute bronchitis.

For the difficulty of breathing, give half grain doses of cannabis indica, or five drop doses of tincture of aconite, or one-sixth of a grain doses of morphia. Extract of belladonna, or of stramonium, is also worthy of trial.

Water in the Chest. — *Hydrothorax.*

This disease consists in a collection of water in the cavity of the pleura.

Physical Signs. — There is a dull sound over the effusion.

The breathing murmur is diminished, and gradually disappears altogether over the space occupied by the effusion.

Bronchial breathing is heard in the same part.

When the amount of fluid is small, egophony is heard in the middle regions of the chest.

Bronchophony is heard when the effusion is larger.

General Symptoms. — Either upon lying down, or using active bodily exercise, the patient finds his difficulty of breathing *increased.* When in bed, he lies with his head and shoulders raised, which, by causing the fluid to settle at the bottom of the cavity, prevents, in a measure, its pressure upon the lungs, and gives him a little rest. His sleep is interrupted by sudden starts, with alarm and terror. The pulse is hard, the thirst great, the urine scanty and high-colored, and has a sediment. After a time, the feet swell, the face is pallid and livid, and the countenance expresses anxiety and alarm. There is a short, dry cough.

When the quantity of fluid in the chest becomes large, the patient cannot lie down at all, and only gets short and disturbed naps in the sitting posture.

Of all the symptoms, the starting in sleep is the most certain sign of the disease.

Causes. — In some rare cases, this may occur as a primary disease, — that is, as a disease not dependent upon another as its cause.

The greater number of cases, however, are secondary. They arise from organic disease of the heart, or liver, or stomach. Inflammation of the pleura is a very frequent cause.

A plethoric, or full state of the system, predisposes to this complaint, — particularly in those persons who indulge freely at the table.

It may arise, too, from the striking in of skin eruptions; from the free use of liquors; and from frequent excessive bleedings or purgings.

Treatment. — Dry-cupping is a valuable remedy, and should always be practised.

The chest should be painted with the tincture of iodine, and a good degree of substantial *soreness* be kept up.

The internal remedies are purges (31) (14) (30), and diuretics (128) (129) (130) (131).

The iodide of potassium, in doses of five or six grains, once in three or four hours, is an excellent remedy. The following is a good form of taking it, — iodide of potassium, one once; fluid extract of pipsissewa, two ounces; water, half a pint. Dose, one teaspoonful.

The skin should be bathed and rubbed daily, three or four times, with much friction.

Pleurisy. — *Pleuritis.*

Pleurisy, or pleurisy fever, as it is sometimes called, is an inflammation of the pleura, or the membrane which lines the chest, and, at the same time, is folded back so as to cover the outer surface of the lungs.

The pleura, as is elsewhere explained, is a short sac or bag, whose inner sides are kept moist, so that they may slide easily upon each other as they are moved by the alternate contractions and expansions of the lungs in the act of breathing, and whose outer sides are made to grow, — one to the inside of the chest, and the other to the outside of the lungs.

Pleurisy and lung fever, then, must be kindred diseases, and exist, more or less, together. In truth there is almost always some affection of the pleura in lung fever, and some affection of the lungs in pleurisy. The pain in lung fever is owing to some inflammation of the pleura; and the appearance of the rusty-colored phlegm in pleurisy indicates that the lungs have been reached by the inflammation of the membrane which covers them.

Physical Signs. — Dulness on percussion, at the lower part of the chest, which ascends as the effusion of water increases.

If the effused fluid is not great, there is puerile breathing at the top of the lung.

Friction sound is heard occasionally.

Egophony is heard when the amount of fluid in the pleura is small.

As the amount of water increases, bronchophony appears.

General Symptoms. — This disease is most frequently introduced by *shiverings*, which are soon succeeded by high fever, with a peculiarly hard, resisting pulse; sharp, *stabbing* pain in the side, — generally just below the nipple, but sometimes extending to the shoulder, arm-pit, and back; hurried and interrupted breathing; and a short, dry cough.

The pain is greatly aggravated by motion, coughing, or an attempt to take a long breath. It holds the patient under constant and powerful restraint. We find him lying upon his back, or his well side; his countenance full of anxiety, — fearing to move, cough, or even breathe needlessly; and often crying out from the keen torture these necessary acts inflict in spite of all his caution.

At a more advanced stage, when the tenderness has somewhat abated, he will prefer to lie on the diseased side, as this leaves the healthy lung more at liberty.

Observations. — The first effect of the inflammation of the pleura is to dry up the moisture with which its inner surfaces are lubricated, or made smooth and slippery. As a consequence, these surfaces become rough, and rub harshly upon each other, and produce a sound, in the early stages of pleurisy, like that of rubbing two pieces of wet leather together. It may be imitated by rubbing the finger back and forth upon a table. It is sometimes a creaking noise, like that of new shoes.

As the disease advances an important change takes place in the state of things. Instead of an unnatural dryness, a watery fluid is poured out copiously from the inflamed surfaces of the pleural sac. This is called *the period of effusion.* This generally, though not always, relieves the pain. But, by compressing the lung, causes dangerous difficulty of breathing.

The air-cells are compressed by the effused fluid, and are not penetrated by air. Hence the absence of the breathing murmur.

The pouring out of water between the layers of the pleura, compresses the lung, and removes it from the walls of the chest. Hence the dulness or deadness of sound upon percussion.

When listening with the stethoscope, the voice of the patient sounds feeble and interrupted, like the bleating of a goat, and is hence termed, *ægophony*, or *goat-voice.*

This peculiar voice is heard only when the effusion of water has been moderate in quantity, and only a thin layer of liquid lies between the ribs and lung. It is caused by the voice passing over this thin layer, which is thereby thrown into *vibrations*, or wavy, quivering motions. When thus agitated, the fluid reacts upon the voice, making it sharp and tremulous.

When the effusion has become large, these effects cease; but another sign then shows itself, and distinguishes pleurisy from the healthy state, and likewise from the solid, hepatized state of the lung in lung fever. It may be discovered thus:

If the hand be laid flat upon the chest of a healthy person, while he is speaking, a *vibration* or *thrill* will be felt. If, in like manner,

the hand be laid upon the chest of a person having lung fever, with hepatized lung, this thrill will be found still more perceptible. But when the hand is placed over the place of watery effusion on the chest of a person having pleurisy, there will be discovered, when the person speaks, *no thrill whatever. The absence of this thrill, then, is one of the very best signs of pleurisy with effusion.*

Persons recover from pleurisy sometimes very rapidly, before effusion has taken place. It is then said they have had an attack of *dry* pleurisy. When liquid has been poured out, even in considerable quantity, it is sometimes reabsorbed, and the patient recovers perfectly. In other instances, it compresses the lungs, interferes seriously with breathing, reduces his strength, and he sinks rapidly.

Treatment. — Pleurisy has been divided for description and treatment into three stages, following the natural events of the inflammation. The first stage comprises the period from the first onset to the time when effusion commences. The second stage or stage of effusion extends to the time when the liquid begins to diminish; and the third stage consists of the period occupied by the absorption of the liquid.

Should the quantity remain stationary or diminish very slowly after the lapse of two or three weeks, the disease becomes chronic

The indication for treatment during the first stage is to arrest the progress of the disease, to diminish its intensity, to limit the amount of morbid products, and to relieve suffering.

If the patient is robust, has a hard, frequent pulse, accompanied with extreme pain and fever, blood-letting is indicated. The abstraction of ten to fifteen ounces of blood will give great relief and diminish the intensity of the attack; but if the patient is not seen early, and is of a feeble constitution, some other measures should be substituted for it. The mass of blood may be lessened by saline cathartics, such as the sulphate of magnesia, or the bitartrate of potash in combination with jalap.

The effect of a full dose of Epsom salts is equal to the abstraction of a pint of blood from the system. Depletion is obtained this way without the impoverishment of the blood.

The frequency and force of the heart's action may also be affected by the nauseant sedatives, such as tartarized antimony and ipecacuanha, and by the direct sedatives, such as the tincture of aconite and of veratrum viride; therefore, if blood-letting is contra-indicated, the first thing to be done is to give the sulphate of magnesia, and follow it with a full opiate in the shape of Dover's powder, to alleviate the painful stitch in the side and to tranquilize the system. (See additional treatment p. 876.)

Lung Fever. — *Pneumonia.*

This disease, by common usage, has been called a fever; but by physicians it is reckoned one of the *inflammations.* It is inflammation of the *lungs* or *lights;* and whatever fever there may be results entirely from this local inflammation.

Signs and Symptoms. — A patient suffering with lung fever, is generally found lying upon his back, with some pain in the side; more or less difficulty of breathing; a cough, at first dry, but soon accompanied by raising a thick, sticky, rusty-colored matter, composed of a mixture of phlegm and blood. As the disease increases in severity, this matter will become more sticky and tenacious, so that it will adhere to a spit-cup turned upside down. There will be more difficulty of breathing, greater prostration, and perhaps some delirium.

For the purpose of more clearly describing this complaint, it is found convenient to divide it into three stages, or degrees of progress.

First Stage. — This is called the *stage of engorgement.* The lungs during this stage are *engorged* or *crowded* with blood. If we could inspect them, we should find the inflamed portion *redder*, *thicker*, and *heavier* than usual. We should find them weaker, that is, more easily torn than in the natural state; with less air in them, and consequently crackling less upon pressure, — yet not entirely destitute of air and crackling, and not so heavy as to sink in water. Rapping upon the chest at this period gives out a flatter, duller, or less hollow sound than usual. On applying the stethoscope, we hear less of the natural *rustling* sound of health; and, either mingling with, or overcoming it, we hear a minute *crackling* sound, as the air passes in and out in breathing.

This crackling has been compared to that produced by fine salt thrown upon red-hot coals; or by that of rubbing a lock of fine hair between the thumb and finger near the ear. It is caused by small bubbles of air being forced along the moist and sticky sides of the small tubes and air-cells. It is heard only while the breath is being drawn in.

Second Stage. — If the inflammation advances to the second stage, the swelling of the diseased lung increases so as to force out the air entirely, and it becomes *solid*, and wholly useless for the purpose of breathing. In solidity and general appearance, it resembles a piece of liver. Hence it is said to be *hepatized*, or *liverized;* and this is called the stage of *hepatization.*

As the lung grows more solid, its vitality and strength diminish; it is not near as strong as a piece of healthy liver, though it looks like it; it is soft and easily broken; indeed it seems to be in a state of commencing decay or rottenness. Hence some writers, in order to be more precisely correct, call this the stage of *red softening.*

With increased solidity, there is of course increased dulness on percussion. When the stethoscope is applied to the chest, we hear no sound of air passing into and out of the diseased lung; no natural rustling, or minute crackling; but in their stead, we have a kind of whistling, produced by the air passing back and forth in the windpipe and its branches, but finding no entrance into the solidified air-cells. The breathing sometimes sounds like a sort of puff, — owing to the column of air rebounding when refused admission to the closed-up cells.

The general symptoms now increase in severity. There is greater

difficulty of breathing ; the phlegm is more gluey ; perhaps some delirium shows itself ; and the patient grows weaker.

Third Stage. — At this period, the lung changes from *red hepatization* or *red softening* to *gray hepatization* or *gray softening*, and matter is now found diffused through its whole substance. The percussion sounds are much the same as in the second stage. On listening, we hear more of the rattling sound produced by disturbed phlegm. The matter raised is thinner, — more like liquid ; and looks like prune-juice. The symptoms generally indicate that the patient is sinking. Patients may recover from the first and second stages, but rarely from the third.

Treatment. — Pneumonitis has been divided into three stages, corresponding to the inflammatory events of the disease: the first stage is that of active congestion, the second that of solidification, and the third that of resolution. The duration of the first stage is from twenty-four to forty-eight hours, of the second from two to four days, and the stage of resolution lasts from eight to ten days. Different cases vary, however, in these times. These different stages furnish different remedial indications.

The objects of treatment in the first stage are to arrest the disease, to lessen its intensity, to relieve pain, and to promote toleration of the disease.

When high fever, a hard pulse, and extreme pain are present in a robust constitution, the abstraction of blood from the arm is indicated. These cases are not frequent, for lung fever mostly occurs in patients with feeble constitutions, but when practised in the proper cases, the relief to pain and embarrassment of breathing is often immediate and marked. In those cases where blood-letting is contra-indicated, the same end can be secured, but more slowly, by saline cathartics and sedative remedies. After saline purgation, if the skin is hot and the pulse is frequent, tartar emetic may be given in small doses as a nauseant sedative; but it must not be carried to the extent of distressing nausea. After this follows the use of vascular sedatives, such as the tincture of aconite and the tincture of veratrum viride, if not contra-indicated by the feebleness of the patient with a tendency to depression.

Sometimes the sulphate of quinine, in a full dose of from twenty to forty grains, at the onset or within eight or ten hours, will arrest the disease. It may be well to try it, as it can be administered with perfect safety. Opium is of great importance also, to relieve pain and tranquillize the system.

Cold or warm application to the chest may be used according to the preferences of the patient. Warm applications act as revulsents; the cold diminishes the determination of blood to the part, and relieves the pain by obtunding sensibility. Counter-irritants are not advisable in this stage.

The treatment of the second stage aims at the promotion of resolution of the inflammation, the palliation of the symptoms, and the maintenance of the powers of life.

The tinctures of veratrum viride and aconite may be continued in this stage, if there is considerable fever and there is no tendency to asthenia; but the leading measure is to support the system.

This course embraces the use of tonics, stimulants, and nutritious diet. The use of alcohols is necessary in most cases, and sometimes very freely.

The diet should consist of milk, farinaceous substances, and animal broths. Quinine in tonic doses is the best remedy in this stage.

The preparations of opium are very useful, and only contra-indicated by the accumulation of mucus in the bronchial tubes.

Digitalis is useful in five to ten grain doses three or four times a day, when it is necessary to increase the heart's action.

The carbonate of ammonia is necessary in cases of extreme prostration.

The external application of the tincture of iodine is the best counter-irritant in this stage.

During the third stage, all those hygienic measures which improve the general health are to be pursued.

Typhoid Lung Fever. — *Typhoid Pneumonia.*

This is an inflammation of the lungs, differing from the preceding only in the character of the fever attending it, which is of a low, typhoid character. The disease, like typhoid fever, is characterized by great debility and prostration.

Symptoms. — These are a combination of the symptoms of pneumonia and of typhoid fever. The disease begins with great weariness, lassitude, dizziness, pain in the head, back, and limbs. Soon there is much difficulty of breathing, tightness across the chest, with a dry, short, hacking cough.

As the disease advances, the active symptoms pass away; there is a dull pain across the chest; drowsiness is very apt to come on, with the various symptoms of sinking peculiar to typhoid fever. The skin is harsh and dry, the temperature uneven, the tip and edge of the tongue red, and the middle covered with a yellow or brown fur. The bowels are tender, swollen, and drum-head like; while there is often a diarrhœa, — the discharges having a dirty-yellow color.

Treatment. — This should be like the treatment of pneumonia and typhoid fever united.

Great care must be taken not to use *reducing* remedies. While active purging must not be used, yet, if there are symptons of an inactive state of the bowels, podophyllin and leptandrin, (34), (39), may be employed with advantage.

When there are symptoms of great depression, use tonics (46), (48), (50), (53), (60), (64), (67), (73), taking care to keep the cough loose by flaxseed, slippery elm, and marshmallow tea, and by some external irritant.

Asthma.

Asthma may be defined to be great difficulty of drawing in the breath, — coming on suddenly, sometimes gradually, — accompanied with a sense of extreme suffocation, and a desire for fresh air; continuing for a longer or shorter period, and then passing away, and leaving the patient a period of comparatively easy respiration.

Symptoms. — There are sometimes no premonitory symptoms, the attack coming on suddenly, and without warning; but more frequently there are, for some days before the onset, loss of appetite, flatulence, belching of wind, irritability, languor, chilliness, oppression, and drowsiness. The hard breathing generally makes its appearance in the night, — quite often at three or four o'clock

in the morning, when the nervous system is at its lowest ebb. There is first a sense of tightness, or stricture, across the chest, which seems to expand with difficulty. The patient can no longer remain lying down; he rises up, draws up his knees, and, leaning forward, puts his elbows upon them, and his head upon his hands, and then struggles hard to draw in his breath; which, passing in slowly and laboriously, produces a loud wheezing sound. Sometimes he feels that he must have fresh air, and, rushing to a window, puts his head far out, to catch a stirring breeze. The hands and feet are cold, the face haggard and distressed, — sometimes a little red and swollen, but more generally pale and shrunk, — the body wet with perspiration, the pulse irregular, feeble, and small, though sometimes not disturbed. These symptoms continue for some hours, more or less, when the breathing becomes more easy, and there is a little phlegm raised, sometimes considerable. This cessation of difficult breathing may be complete, or only partial; and lasts for a longer or shorter period, when the attack again recurs.

Causes. — It is well known that Asthma has its cause mainly in the nervous system. The air tubes are encircled with a series of little bundles of fibres, which are, in fact, muscles, and like all other muscles, have the power of contracting or shortening themselves. These muscles, too, like all others, have nerves distributed to them; and when these nerves become diseased or irritable, they will become disturbed on certain occasions, and cause these small, circular puckering strings to contract and close up the air tubes near their termimations, very much as the puckering string closes the mouth of the work-bag, so that very little air can pass into the air cells, and that little with great difficulty and slowness. When these contractions take place, and the air is thus shut off, the result is a fit of asthma. This disease may be brought on by any of those states of the atmosphere which disturb or irritate the bronchial surfaces, or by any of the numerous causes which mysteriously unbalance the nervous system. A fit may be brought on by whatever disturbs the mind.

Treatment. — The disease has been regarded as extremely difficult of cure. There are certain remedies, however, which have a remarkable control over it, and if skilfully used, will frequently bring it to a complete termination, and even in the worst cases, to a state of very great mitigation and improvement.

Inhalation. — The most important and certain remedy is the use of the Alterative Inhalant, described on page 221. I have with this article alone effected some surprising cures; yet it is well to combine other treatment with it. I have had several cases of a most distressing character, — the attacks continuing night and day, — in which the inhalation, judiciously administered, has caused the disappearance of the complaint within twenty-four hours, and in which no return of suffering has occurred for several weeks, and then only in a modified form. This remedy should be used four or five times a day.

Iodide of potassium is a most valuable internal remedy in this complaint, indeed, in a certain sense, it is almost a specific. It should be used (prescriptions 101, 138, 140, 151) at the same time with the inhalation. The following preparation is a very good remedy for this disease: Ethereal tincture of lobelia, two ounces; tincture of asafœtida, one ounce; laudanum, one ounce; iodide of potassium, two ounces; simple syrup, four ounces. Mix. Dose, from a teaspoonful to a tablespoonful, every hour or two.

Several other remedies are used for asthma, with more or less success, —

such as electro-magnetism, smoking stramonium leaves, burning paper dipped in a strong solution of nitrate of potash, and inhaling the smoke, etc., — but none of these have as much value as the two remedies first named.

In as grave a complaint as a severe case of asthma, it is always well to seek the aid of a physician. I intended to have given some interesting cases, but want of space forbids.

Hay-Asthma. — Hay-Fever.

This is a very troublesome complaint, which seems to combine the peculiarities both of asthma and of influenza. Fortunately, it attacks but few persons, and those only at particular seasons of the year, — namely, while hay is in blossom, and during hay-making.

Symptoms. — These are a combination of the symptoms of the two diseases above named. There is great irritation of the eyes, with sneezing, and a free discharge from the nose. There is tightness across the chest, difficulty of breathing, and a pricking sensation in the throat. These symptoms often appear in great severity, making the complaint a really distressing one.

Cause. — This disorder appears to have but one cause, — namely, some sort of emanations from the grasses, flowers, etc., while in blossom; which emanations come in contact with the mucous lining of the eyes, nose, and throat, producing very great and teasing irritation.

Treatment. — One of the best remedies for this troublesome complaint is to avoid the cause, by removing, during the flowering and haying season, to some large city, or, still better, close down to the seashore, where flowers and hay do not grow.

Of medicines, the tincture of lobelia, taken in moderate doses, is a very good remedy. Quinine and iron, given in combination (75), are valuable preparations. Strychnine and nux vomica, in connection with iron, or otherwise (316), (83), (84), (85), (86), (95), are very useful. Iodide of potassium (101), (138), (140), is also worth a trial. Another very good remedy is the chloride of lime, or the chloride of soda, placed in saucers about the sleeping-room. Pieces of cotton cloth may also be dipped in one of these solutions, and hung about the apartments of the house. The hands and face may likewise be washed, once or twice a day, in a weak solution.

The oxide of zinc and the extract of nux vomica, made into pills, two grains of the zinc to half a grain of the extract to each pill, and one pill taken morning and evening, should not be forgotten.

HEART DISEASES.

LIFE rests upon a tripod, — the brain, the lungs, and the heart. These are equally important to its well-being and continuance.

In substance, the human heart is a bundle of muscles, so put together as to bear the greatest possible amount of work. In size, shape, and look, it is much like the heart of the hog. I wish it never had a likeness to it in its moral nature.

The heart is enclosed in a case or sac, called the pericardium. It lies between the two lungs, a little to the left side of the chest. Its point is under the sixth rib on the left side, and its lower surface rests on the diaphragm, — a horizontal partition between the chest and belly.

The heart is double. It has four cavities, — two for receiving the blood, which are called *auricles*, and two for driving it out, called *ventricles*.

The venous, or dark blood, is brought from all parts below, and emptied into the right auricle through the *ascending vena cava*, and from all parts from above, and poured into the same cavity through the *descending vena cava*. From this it passes into the right ventricle, which contracts, and forces it through the pulmonary artery into the lungs, where it becomes *red*, and passes into the left auricle through the pulmonary vein, thence into the left ventricle, which contracts, and throws it out through the great aorta to all parts of the body. Fig. 93 gives a good idea of the circulation through the heart and lungs.

The heart is divided into two sides, which are separated from each other by a muscular partition, — each side having an auricle and a ventricle.

The auricles have comparatively thin walls, as they are only used for reservoirs. The walls of the ventricles are much thicker, being used, — particularly that of the left side, — for forcing the blood over a large surface.

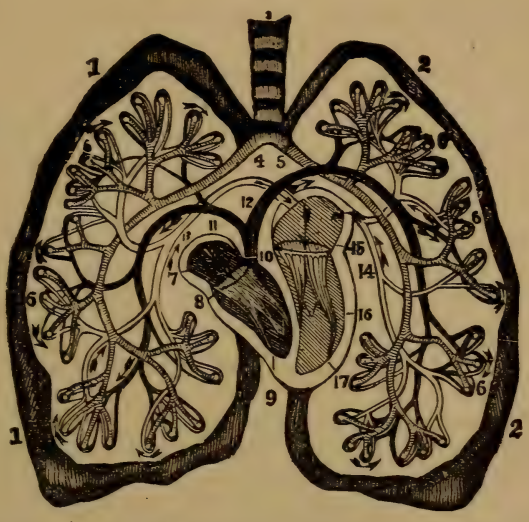
Between the auricle and ventricle on the right side, are three folds of triangular membrane, called the *tricuspid* valves. Between the auricle and ventricle on the left side, are three valves, called *mitral*.

At the beginning of the *pulmonary artery*, and the *aorta*, are three half-moon shaped folds of membrane, called *semilunar valves*.

The office of all these valves is, to close after the blood has gone through, and prevent its flowing back while the cavity is being again filled. They do the same duty, in fact, as the valves of a pump.

Through this heart, thus constructed, all the blood in the body, — about twenty-eight pounds, — passes once in about one minute and a half. This is rapid work; and when we consider that the heart works in this way through the whole life, resting not, day or night, we cannot wonder that it gets out of order.

Fig. 98.



The whole heart is seldom affected. The left side is more liable to disease than the right.

Impulse of the Heart.

The ear when placed over the heart, feels, at each beat, a slight shock. This is felt at the same time the first sound is heard. This impulse is caused by the apex or point of the heart being thrown up against the ribs by the contraction of the ventricles. It is felt best between the cartilages of the fifth and sixth ribs on the left side.

The Sounds of the Heart.

On applying the ear to the chest just over the heart, two sounds are heard. The first one is dull and slightly prolonged; the second is a shorter and smarter sound, having a sort of clack. These occur in pretty rapid succession, and then comes a brief interval. And this round of action, first a long and dull sound, then a short and smart one, and then an interval, — called the heart's *rhythm*, — is repeated continually. If the space of time occupied by the rhythm be divided into five parts, the first sound will take about two parts, the second one, and the interval of repose, the remaining two. The first sound is heard about the time of the contraction of the ventricles, and is therefore called the *systolic* sound the second is synchronous with

the opening of the ventricles, and is called the *diastolic* sound. The syllables *too-to — too-to*, very fairly represent the two sounds of the heart. These sounds are heard over the largest space in lean persons.

Percussion Sounds.

If the ends of the fingers be struck upon the chest over the heart, a dull sound will be heard over a space from one and a half to two inches square, — beginning at the fourth rib on the left side, and extending down nearly to the sixth. The dulness is diminished by lying upon the back, and increased by leaning forward, and by taking a full breath. The deadness of sound is caused by the heart being a partially solid body. The lungs which surround it, yield a clear sound.

If a solid substance, as large as the heart, were placed on the inside of a drum, against the head, only a dead sound would be obtained by striking on that spot; everywhere else, the sound would be louder.

Altered Sounds of the Heart.

These sounds are changed by disease in a variety of ways, both as to their character and duration. One or both sounds may be turned into a noise like the blowing of a pair of bellows. This is called the *bellows sound.* When this sound is very harsh, it may become like the noise of a rasp, or file, or saw. These altered sounds are all produced by an altered condition of the valvular passages through which the blood passes. If you build an aqueduct of equal dimensions throughout, and smooth on the inside, you may send a certain volume of water through, at a given speed, without noise. But if you make sudden contractions in the aqueduct, or allow large stones to project into it, and then attempt to send through the same body of water, at the same rate of speed, you will hear all sorts of noises.

Enlargement or Hypertrophy of the Ventricles.

This is simply a thickening, or an increase of bulk, in the walls of the ventricles. The muscles composing the walls of one or both of these cavities, grow thick and large.

Physical Signs. — Impulse stronger than natural. When considerable, it is accompanied with a lifting and heaving of the parts. Dull sound on percussion over a larger space. First sound of heart prolonged; second sound feeble. The interval of silence, shorter than natural. In bad cases, the second sound is nearly extinguished.

General Symptoms. — Hypertrophy of left ventricle gives a strong, prolonged, and tense *pulse.* Palpitation more constant than in any other disease of the heart. In advanced stages, the patient is easily out of breath. There is a rush of blood to the head on making exer-

tion, or stooping, with more or less throbbing and lancinating headaches, which are aggravated by suddenly lying down or rising up. There are vertigo, ringing in the ears, sparks of light and other illusions before the eyes; also a purplish, violet or livid color upon the cheeks, nose, and lips. In many cases there is a dull, severe, aching pain in the region of the heart, and extending towards the shoulder and the inside of the arm.

When the *right* ventricle is enlarged, there is a swelling of the external jugular veins.

Causes. — The walls of the heart are thickened by *overwork*, in the same way that the blacksmith's arm is made muscular and large. All muscles grow in the same way. More action sends more blood to them, and this causes an increase of nutrition.

Whatever interposes an *obstacle* to the passage of the blood through the valvular openings, will cause the ventricles which force it through to work harder. Hence, obstructions in the semilunar valves cause hypertrophy of the ventricles.

Any excitement of the mind, or any great exertion, which causes the heart to beat harder and faster, if it be often repeated, will induce a thickening of the ventricles.

Treatment. — First, remove, as far as possible, all causes of excitement which produce palpitation. If the head is much affected, apply wet cups to the back of the neck. The same may be applied over the heart. This will generally improve the symptoms at once. A blister placed over the heart will likewise make a favorable impression.

The meals should be taken at regular intervals, and should be very light. The food should be plain and simple, and composed much more of vegetable than of animal food. In fact, the diet should be so spare as slightly to reduce the strength.

The patient should be careful never to take violent exercise, or, indeed to be in a hurry about anything. In bad cases, walking up hill, or against a strong wind, is often out of the question, and must in any case be attempted with great caution. Stair-cases are to be shunned as enemies. An attempt to run, even to avoid being left by the cars, might, in some cases, prove immediately fatal. Carriage riding is not objectionable.

The passions must be held in the most thorough subjection. Excitements of all sorts are dangerous, and must be avoided.

For the first week or two of treatment, active purgatives will be useful. For this purpose, epsom salts and senna will answer a good purpose, and should be used so as to procure two or three watery stools a day.

In addition to this, some sedative to lessen the force of the heart's action, is generally needed, — especially when there is considerable palpitation. For this purpose, tincture of black cohosh, and tincture of scullcap, or the former with tincture of digitalis (285) (94), are quite useful. Three to ten drops of tincture of the American hellebore (veratrum viride) will reduce the action of the heart perhaps more effectually than any other medicine.

Dilatation of the Ventricles.

The several cavities of the heart hold about one and a half ounces each. Dilatation is simply an *enlargement* of these cavities, so that they will hold more. And this increase in the size of the cavity in simple dilatation is generally at the cost of the walls, which are made thinner and weaker, — just as the walls of a bladder are made thinner by blowing into it and increasing its internal dimensions.

Physical Signs. — Impulse more abrupt, and less marked than natural. Dull sound on percussion commensurate in extent with the dilatation. The first beat of the heart, clearer, louder, and shorter than natural, and more nearly resembling the second.

General Symptoms. — Difficulty of breathing; terrific dreams; starting from sleep; swelling of the feet and legs; purple, violet, or blue color of cheeks, nose, lips, and especially around the eyes; feeble and oppressed palpitation; various disturbances in the head; bleeding from the nose, stomach, bowels, and womb; and frequently enlargement of the liver.

Explanations. — The first sound of the heart is short and not well marked, in consequence of the muscular walls of the ventricles in this disease being thin and in a weakened condition, so that every stroke they make is short, quick, and spasmodic, instead of strong and lifting, as in hypertrophy. For the same reason, the impulse is a brief blow dealt the walls of the chest, which gives a slight shock, but has not power enough to lift the chest up. The blow is quick, because the muscle is thin and can contract quicker than a thick one.

Dilatation, by thinning the walls of the cavities, enfeebles the heart, and shows us an obstructed circulation. Accordingly the blood is not transmitted by the left ventricle, and being retained in the lungs, it causes a crowded state of the vessels, and difficulty of breathing; also congestion of the brain, with terrific dreams, etc. And this engorgement of the lungs, being propagated backwards to the *right* heart, great veins, and all their ramifications, produces dropsy of the feet and legs, discoloration of the face, passive hemorrhages, and congestion of the brain, liver, and membranes. Fig. 93 gives an idea of how all this happens.

Treatment. — As in many other diseases, search out the causes, and remove them. If it be obstruction of the circulation in the lungs by bronchitis, or other complaint, that needs the first attention. If it be caused by violent exercise, by strong emotions of the mind habitually indulged, or by drunkenness, or any other irregularity of life, these habits must be corrected without delay.

If it be caused by organic disease of the valves of the heart, relief cannot be so readily obtained; but even in these cases, it is to be sought and expected.

The circulation is to be kept as tranquil as possible by a strictly quiet and orderly life, and a plain, moderate, unstimulating diet. In

this disease, however, it should be more nutritious, and composed to a larger extent of meats, than in hypertrophy.

In some cases the general health and tone of the system will need to be improved by bitters (50) (67) (64) (69) (79), mineral acids (60), iron (269) (61), and aromatics (115). The compound mixture of iron is a good preparation when this mineral is called for by a low state of the blood.

The stomach should be kept in the best possible condition, as a very small disturbance of it, even from acidity, will set the heart to beating very violently.

If hysterical symptoms are present, the compound galbanum pill, and valerian (97), and other *nervines* will be called for.

In attacks of great difficulty in breathing, immerse all the extremities in warm water, and throw a blanket around the patient to promote sweating, — at the same time admitting fresh air to satisfy the desire for breath. Give a draught, composed of ether, laudanum, ammonia, etc. (135). This may be repeated two or three times, at intervals of half an hour, or an hour, according to the urgency of the case.

Hypertrophy with Slight Dilatation.

This is one of the most common complications of heart disease. It consists both in a thickening of the walls of the heart, and an enlargement of the cavities, — the former being more marked than the latter.

Physical Signs. — Both sounds are louder than in any other disease of the heart, and are heard sometimes over the whole chest. The impulse is strong and heaving, with an abrupt back-stroke. In bad cases, the whole person, and even the bed, is shaken by it. The dull sound on percussion covers a large space.

General Symptoms. — The same as those of the two diseases of which it is composed, slightly modified by the action of each upon the other.

Dilatation with Slight Hypertrophy.

This is an enlargement of the cavities of the heart, with a slight thickening of its walls; the dilatation being the predominant disease, or greater than hypertrophy.

Physical Signs. — Percussion gives a dull sound in the region of the heart, in proportion to its size. The first beat resembles the second. The second beat is louder than natural.

The impulse is a short, quick stroke, which contrasts strongly with the slower and heaving one of hypertrophy with dilatation.

The general symptoms and the treatment are a modification of those of the two diseases united in it. It is, however, to be kept in mind that the dilatation takes the lead; and, furnishing the predominant symptoms, is specially to be regarded in the treatment.

Aneurismal Tumors of the Heart.

When, from some obstruction in the valves, the blood cannot easily pass out of an auricle or a ventricle, its inner walls may become unable to bear the distending force, and giving way, let the blood through against the outer coats, which stretch, and swell out into the shape of a tumor, — the inside of the tumor becoming a regular *sac*. Such a state of things constitutes an aneurism of the heart. Of course it is a grave disease.

Softening of the Heart.

In this disease the substance of the heart becomes soft, and easily broken. It is generally the result of some form of inflammation.

Physical Signs. — The contractions of the heart being weakened by softening, the impulse is reduced in force, and both beats are weaker, and often they are intermittent. The first beat becomes short and flapping, like the second.

General Symptoms. — A quick, feeble, small, and faltering pulse, great anxiety, and a disposition to faint. General languor; a sallow, bloodless, withered complexion, with a purple, livid tint of the lips and cheeks, and frequently, general dropsy, from the inability of the heart to propel its contents.

Treatment. — When accompanied by acute inflammation, softening is to be treated on the same principles as inflammation of the heart-case.

If it be a result of chronic inflammation, it calls for iron, bitters, nutritious animal food, and good air.

Induration of the Heart.

The muscular substance of the heart sometimes undergoes a hardening process. It is occasionally so much hardened as to sound, when struck, like a hollow horn vessel. The disease is rare.

It increases the heart's impulse, like hypertrophy; and it requires about the same treatment with that disease.

Fatty Degenerations of the Heart.

The heart sometimes becomes overloaded with fat, which is deposited between the heart-case and the muscular substance, — covering the organ all over externally, and in some cases penetrating to some depth into its substance. The muscular walls themselves become thin and flabby.

Symptoms. — The sounds of the heart are diminished, — especially the first. The pulse is irregular. Pain, and a feeling of oppression in the region of the heart, with general signs of retarded circulation,

such as congestion of the brain and liver. There is occasionally giddiness, loss of memory, and palpitation.

Treatment. — Exercise, mental excitement, and stimulating drinks must be avoided; and the patient must live for one or two years on a very light diet, taking but very little animal food.

Bony and Cartilaginous Productions in the Heart.

These productions in the heart are fortunately rare. Yet they occur; and the point of the heart, in its whole thickness, is sometimes changed to cartilage. The ventricles are sometimes so ossified as to resemble the bones of the head.

The symptoms of these degenerations are obscure; and as such cases are not curable, it is of less consequence that we should be able to know their precise nature during the life of the patient. The treatment can only afford temporary relief, and should be such as is prescribed in other heart diseases with similar symptoms.

Shrinking of the Heart. — *Atrophy.*

The heart, like any other muscle, is liable to defective nutrition, and in consequence of it may become small. It shrinks, in some cases, to the size of an infant's heart.

The complaint is generally caused by whatever reduces the general flesh, as consumption, diabetes, chronic dysentery, cancer, and excessive loss of blood.

It can hardly be called a disease. Persons who have it are less subject to inflammatory diseases than others, though they faint from slight causes, and have nervous affections.

Treatment. — If its causes can be discovered, treat them; if not, the treatment should be the same as for dilatation.

Acute Inflammation of the Heart-Case. — *Pericarditis.*

The pericardium, or heart-case, is a membranous sac, in which the heart is contained. It is composed of two layers. The outside one is *fibrous*, dense, and white; the inside one is *serous*. The serous layer forms the lining of the fibrous one, and then is reflected over the heart, and the roots of the large blood-vessels.

When the pericardium becomes acutely inflamed, it throws out, both lymph, and serum or water. The lymph often causes the two layers of the sac to grow together.

Physical Signs. — The impulse is strong when the effusion of water is small, — feeble and unequal when it is large. Percussion yields a dull sound in proportion to the amount of fluid in the sac.

When listening with the stethoscope, a rough noise is heard, resembling either the rasping of wood, the grating of a nutmeg, the rustling of silk, or the crackling of parchment. Sometimes it is softer, like

the blowing of a pair of bellows. Occasionally, it resembles the creaking of a new shoe-sole, or has a low creaking, like the tearing of linen cloth.

When there is effusion, the ordinary beats of the heart sound dull and distant.

General Symptoms. — Acute inflammatory fever generally preceded by chills, with pungent pain in the region of the heart, shooting to the left shoulder-blade, shoulder, and upper arm.

Pain increased by taking a full breath, by stretching the left side, by percussion, and by pressure between the ribs over the heart. Sometimes the pain is in the epigastrium, or left hypocondrium. Inability to lie on the left side.

Explanation. — The noises mentioned above, are produced by the rubbing together of opposite surfaces of the heart-case, made rough by the exudation of lymph. The rasping is supposed to be caused by *firm* and *rugged* lymph; the rustling and creaking, by *soft* and *wet* lymph; the bellows murmur, by *soft* and *dry* lymph; the creaking, croaking, and crackling, by *dry*, *tough* lymph. These sounds may all be imitated by rubbing a damp finger upon the back of the hand, while listening with the stethoscope applied to the palm.

Chronic Inflammation of the Heart-Case.

When acute pericarditis runs for more than ten days or a fortnight, it becomes *chronic*. It is chronic from the beginning, when it runs a slow, insidious course, without marked or violent symptoms.

The symptoms are much the same in kind with those of the acute form, only less in degree. This low grade of the symptoms of the disease renders it more obscure than the acute.

Treatment. — In the acute form of the disease, apply wet cups over the region of the heart, or apply from a dozen to forty leeches to the same parts.

At the same time, move the bowels freely by an injection (247), or by a purgative pill (31).

The strength and amount of the remedies employed in each case, must be in proportion to the vigor of the patient's constitution.

It is of great importance that the treatment should be active and prompt, and that the disease should be broken down *early*.

Diluent, cooling drinks (132) (129) (298) (299) should be allowed as freely as the patient desires, in order to dilute the blood, and render it less stimulating to the heart.

At the same time, five to fifteen-drop doses of tincture of veratrum viride should be given every hour, to bring down the action of the heart.

Let the diet be wholly of barley-water, thin gruel, weak tea, or arrow root.

During recovery, the diet must be spare, and the greatest tranquility of mind and body be preserved.

In the treatment of chronic cases, when the cavity appears to contain fluid, counter-irritation is suitable. Blisters, croton oil, the compound tar plaster, and especially the tincture of iodine. The diet may be a little more nutritious than in the acute form of the disease, — embracing light animal food and broths.

Inflammation of the Heart. — *Carditis.*

This is an inflammation of the muscular substance of the heart. When existing alone, it is a very rare disease. Being mixed up with other forms of heart disease, it does not require any separate account of its symptoms or treatment.

Acute Inflammation of the Lining of the Heart.

Endocarditis.

The heart is one of the citadels of life. Disease attacks it on all sides. In this complaint, it has entered the fort, and taken possession. The inflammation is on the *lining* membrane.

Physical Signs. — The impulse is violent, abrupt, and regular, as long as the circulation through the heart is free, but when this is impeded, it is at first a confused tumult (which generally happens when a fort is first taken), and gradually sinks to a feeble flutter.

The dull sound upon percussion covers a space of from three to seven square inches.

The beats of the heart are generally accompanied or marked by a bellows murmur, — the loudness of which depends on the strength of the heart's action.

General Symptoms. — Inflammatory fever. The action of the heart being generally violent and abrupt, the pulse corresponds with it, and is strong, full, and hard.

Explanation. — The bellows sound is supposed to depend on the inflamed and swollen condition of the valves.

The dulness on percussion will be slight when the circulation through the heart is free; — more distinct and marked when it is obstructed.

Dr. Hope says the disease may be anticipated, if a person be *suddenly* attacked with these three signs: namely, fever, violent action of the heart, and a murmur which did not exist before.

This disease, like inflammation of the heart-case, is often produced by, and is intimately connected with, acute rheumatism.

Chronic Inflammation of the Heart's Lining.

Physical Signs. — The impulse more perceptible and diffused than natural.

The dull sound upon percussion covers a space of from four to eight square inches.

There is a sawing, rasping, or filing sound. This sound may cover one or both beats of the heart. Sometimes these unnatural sounds are double; in which case, the first is caused by an obstruction to the natural flow of the blood forward; the second, by the regurgitation or retrograde flow of the blood from some defect in the valve, — just as a pump valve may get out of order, and allow the water which has gone through to flow back.

Explanation. — A variety of organic changes occur in the valves, which give rise to the murmurs. Inflammation of the lining membrane of the heart, reaches the valves, causes puckering, thickening, vegetatious, cartilaginous, bony, and fat-like degenations, which *obstruct* the blood in its onward flow, or prevent a closure of the valves, and allow it to flow back; the former causing the first sound, the latter the second. If the unnatural noise be synchronous with the first beat of the heart, it implies disease in either set of the semilunar valves, or an impossibility of closing the auriculo-ventricular openings; if it accompany the second beat, it signifies that either set of the semilunar valves may be open.

A murmur attending the first beat of the heart, *must* be caused by a current of blood *from* a ventricle; one attending a second sound, by a like necessity, is produced by a current *into* a ventricle.

Treatment. — The same as that for pericarditis. It should be equally *prompt* and *vigorous*. It must not be forgotten that this disease leads to various organic diseases of the valves of a very grave character, and that such mischiefs can only be escaped by cutting the disease short in the very beginning.

Disease of the Semilunar Valves.

The inflammation of the lining of the heart makes sad work with the valves. The semilunars are subject to various changes in their structure.

Physical Signs. — Obstructive Murmur. — In disease of the semilunars, the first beat of the heart is accompanied or obscured either by the bellows murmur, or a sawing, rasping, or filing sound. The unnatural murmur, whatever it is, appears *superficial* or *near*. The second beat is natural.

When the opening into the aorta is contracted, or in any way obstructed by unhealthy growths, so that the blood is subjected to more than a natural degree of *friction* in passing, this sound will be heard. It is called *obstructive*, because it arises from the obstruction of the blood in its *forward* course.

Regurgitant Murmurs. — First beat of heart natural. Second beat accompanied or replaced by bellows murmur. There is sometimes a musical murmur.

Explanation. — The regurgitant murmurs arise from the valves being too small, or defective in some way, and allowing the blood to flow back through the orifice.

This murmur is loudest opposite the semilunar valves, and is more audible *above* these valves than *below* them.

When the aortic valves are contracted or shortened, and the openings are not guarded by them, so as to prevent the backward passage of the blood, there is a *double* bellows murmur, — one when it is *driven through* the orifice, and another when it *flows back.*

Disease of the Mitral Valves.

Physical Signs. — Obstructive Murmur. — First beat of heart natural. Second beat accompanied or replaced by bellows murmur.

Regurgitant Murmurs. — The first beat of the heart accompanied by a loud and rough bellows murmur. This sound is like sawing or filing. It is loudest above or below the nipple, between the fourth and seventh ribs. There is occasionally a musical murmur. The second beat of the heart is natural. Sometimes there is a purring tremor.

General Symptoms of Valvular Disease. — Cough, in many cases with watery expectoration; difficulty of breathing; frightful dreams, and starting from sleep; congestion of the lungs; expectoration stained with dark and grumous blood; swelling of the jugular veins; a livid look of the face; a feeling as if a cord were tied tight around the lower part of the chest; general dropsy, of the legs and feet in particular; passive hemorrhages from the mucous membranes; engorgement of the liver and spleen; congestion of the brain, with feelings of oppression. When the mitral valve is contracted, admitting regurgitation, the pulse is small, weak, irregular, and intermittent.

These are the worst symptoms of an advanced stage.

Explanations. — The examiner will distinguish the various sounds thus:

The murmurs generated at the origin of the arteries, spread their sonorous currents *upwards along these arteries.*

Those produced in the auricular orifices, will be conducted into the auricles, and propagated *downwards towards the apex of the heart.*

Which Set of Valves. — To learn in which set of valves it originates, therefore, find its seat, and *trace its direction.*

Finding the murmur to be in the *aortic orifice*, it is then known to be *obstructive, if the first sound is morbid, and the second sound natural;* and *regurgitant, if the first sound is natural, and the second sound morbid.*

But if the murmur be in the mitral orifice, it is *obstructive when the first beat of the heart is natural, and the second beat morbid; and regurgitant, when the first beat is morbid, and the second beat natural.*

The Pitch or Key of a murmur depends on the distance of its seat from the ear of the listener; — *nearness giving a high, and distance a low key.* Thus, a murmur seated in the orifice of the pulmonary artery, being *nearer* the surface, has a *higher pitch* than any other

It is on about the same key with a whispered *s*, — sometimes a little lower, and depending somewhat on the *strength* of the current of blood, — a *strong current elevating, and a weak current depressing the tone.*

The mitral orifice is situated opposite the junction of the cartilage of the third rib with the left side of the breast bone. The aortic orifice is about half an inch to the right of this, and the same distance lower. It is known by the key being lower, — about like a whispered *r*, which is the ordinary type of the sawing sound.

Murmurs from pulmonic and aortic *regurgitations*, are about two tones lower, in consequence of the currents of the blood being weaker. They are like whispering *awe* by *inspiration;* and if the click of the valve be heard, the sound will be changed to *paw.*

Murmurs in the mitral valve, being more deeply seated, are about four tones lower, and are like a whispered *who.*

The tricuspid murmurs are higher than the mitral, because nearer the surface.

The musical murmur has been compared to whistling, the cooing of a dove, and the mewing of a kitten. It generally results from regurgitation.

The purring tremor is caused, generally, by regurgitation through the mitral valve.

Other Symptoms Explained. — The difficulty of breathing, frightful dreams, congestion of the lungs, hemorrhages, engorgements, etc., mentioned above, all proceed from such valvular stiffenings, puckerings, ossifications, enlargements, and contractions, as occasion a decidedly *obstructed* circulation.

The small, weak, irregular, and interrupted pulse, is caused by contraction of the mitral valve, which occasions an insufficient or irregular supply of blood to the ventricle, and causes the ventricle, by losing the resistance of the valve, to expend its force in a backward as well a forward direction, — thus sending but little blood into the arteries.

Treatment. — The tendency of valvular disease is to produce hypertrophy and dilatation. The strong and ceaseless efforts of the ventricle to drive the blood through an orifice obstructed by valvular disease, will of course make the walls grow thick, which is hypertrophy; and at the same time, the accumulation of blood which cannot be driven forward fast enough, must tend to swell and enlarge the cavity, — which is dilatation.

The great object of treatment, therefore, is to diminish the force and activity of the circulation, — to induce the heart to cease striving to do what cannot be done.

To accomplish this, give sedatives (285) (94) (124). The hellebore and cohosh will be found particularly serviceable.

The tincture of the American hellebore is about the best of all. Purgatives may be given according to the strength of the patient.

When there is dropsy, and a scanty secretion of high-colored urine, diuretics, or medicines to increase the action of the kidneys, are very important. For this purpose, digitalis and acetate of potash (130)

are excellent. Should this not succeed in reducing the dropsy, an active purgative (31) may accompany it.

Diaphoretics, or medicines which promote perspiration, are also useful. This opening of the skin, however, is generally brought about by the hellebore, etc. (124).

The diet should be unstimulating, and yet should be sufficiently nourishing to prevent the patient from running too low. Animal food of the most digestible kind may be taken once a day; though there are many cases requiring its entire rejection.

The passions should be kept in the most perfect subjection, and *the life should be as tranquil as possible. Nothing must be done in a hurry.*

Water in the Heart-Case.—*Hydropericardium.*

This disease is common as an attendant of general dropsy.

Physical Signs. — The impulse is undulatory, as if transmitted through a fluid, and it is not always of the same strength.

The dulness extends upward in a conical form, in proportion to the amount of fluid; — sometimes rising as high as the second rib. The impulse does not coincide with the first beat of the heart.

General Symptoms. — The patient has a *sensation of the heart being in a floating state.* The pulse is small, frequent, and intermittent.

Explanation. — The reason that the impulse does not occur at the same time with the first beat of the heart is, that the apex does not *immediately* strike the walls of the chest, — some time being required to push it up through the fluid.

The beats of the heart sound more distant than natural in consequence of the organ being pushed away from the walls of the chest by the fluid.

Palpitation.—Nervous Palpitation.—Anæmic Palpitation.

There is a great deal of palpitation of the heart dependent on dyspepsia, hypochondria, hysterics, mental agitation, excessive study with deficient sleep, venereal excesses, and masturbation.

Palpitations likewise occur from what is called *anæmia*, or a low and deficient state of the blood.

Physical Signs. — The impulse is weak, fluttering, or tumultuous, — generally increased by trifles.

The beats of the heart are increased in frequency, and sometimes marked by intermission. Now and then they are accompanied by a bellows murmur. There are musical murmurs in the jugular veins, — loudest a little above the collar bones.

General Symptoms. — The complexion is generally pallid and bloodless; the lips and the inside of the mouth partaking of the same pale-

ness; the pulse quick, small, weak, and jerking; and during palpitation, it sometimes has a thrill. Slight causes produce breathlessness and faintness. A dislike of animal food, and a fondness for acids. The monthly discharge in females is deficient, and the whites take its place. Sometimes the menses are too profuse, lasting for several days, and consisting only of blood. In this state of things there is great feebleness both of mind and body, with rushing noises in the ears.

Explanations.— The murmurs depend on a lack of blood. The conditions of their existence are, thinness of blood, a swift and spasmodic circulation, and particularly an unfilled condition of the blood-vessels. A brook is the more babbling in proportion as its water is more shallow. It is a law in physics, that heaviness of freight gives steadiness of motion; and lightness of freight gives unsteady motion. The fireman's hose trembles and vibrates when only half full of water. In like manner the blood-vessels are agitated when imperfectly filled.

Treatment.— This is to be governed altogether by the cause of the trouble. If it be dyspepsia, hypochondria, hysterics, etc., these several diseases require their usual treatment; when they are cured, the palpitation will stop.

But when it is caused by a low state of the blood, then give for several weeks, iron, the compound mixture, and (316) (310).

The food must likewise be nourishing,— tender meat, beef and mutton, with broths, etc.

Gentle exercise will be required, and much exposure to a bracing, out-door air.

Neuralgia of the Heart.—*Angina Pectoris.*

This is a strictly nervous disease. It begins with a sensation of pain and constriction in the region of the heart. This pain is accompanied with more or less pain and numbness in the left arm. In females it is not uncommon for it to be attended by great sensitiveness and pain of the breasts. When the attack is violent, the pain in the heart is excruciating, and even terrific. There is attending this a feeling of great oppression in the chest, amounting, in the worst cases, to a sense of suffocation. The heart palpitates violently, the brain is oppressed, and fainting sometimes occurs.

The disease is brought on, in nervous subjects, by over excitement of the heart. Walking up hill, against a strong wind, may bring it on. If walking at the time of the attack, the patient is compelled to stop, and stand still till the pain subsides.

The disease is often connected with organic changes in the heart's structure, such as ossifications, and other alterations.

Treatment.— When the complaint depends on organic disease of the heart, the treatment must be directed to the cure of these diseases.

To relieve a severe attack, the patient should be instantly placed in a quiet position; wind in the stomach, if present, should be ex-

pelled by peppermint or anise water, or ether, or (115), or some other aromatic. If there is acidity or sourness of the stomach, it must be corrected by a teaspoonful of soda in half a tumbler of water; and if the stomach be full of undigested food, let the patient take a tablespoonful of ground mustard, stirred up with a teacupful of warm water. This will cause almost instant vomiting.

These things being done, give some quieting, or antispasmodic medicines, as one sixth of a grain of morphine, or one of the following prescriptions: (285) (97) (135) (124).

Great relief is often obtained by sending a current of magnetism through the region of the heart, by applying one pole of the machine in front, and the other upon the back.

During the intervals, the general health is to be improved by a wholesome, nourishing diet, gentle, out-door exercise, and a careful control of all the passions.

Polypus of the Heart.

A portion of the fibrine sometimes separates from the blood in the heart and large vessels, and becoming more or less organized, forms polypuses, which fill the cavities to which they are attached, and seriously obstruct the circulation.

Physical Signs. — When the pulsations of the heart, previously regular, become suddenly anomalous, confused, and obscure, so that they cannot be analyzed, we may suspect a polypus.

General Symptoms. — A sudden and great aggravation of the bad breathing, without any visible cause, — the patient being in agony from a sense of impending suffocation, and tossing about from side to side, struggling for breath. The pulse small, weak, irregular, intermittent, and unequal; the surface and extremities cold; the face, livid, — to which there is generally added nausea and vomiting.

Treatment. — When the polypus is once formed, the case is hopeless. The treatment, therefore, can only be preventive.

The chief things to be done are, to keep the patient in a state of entire tranquillity, and to bring the circulation to the surface, by keeping the skin warm, and excited by friction. This will call the blood away from the heart and great vessels, and lessen the chances of the polypus.

Displacements of the Heart.

The heart may be misplaced from birth. I have seen a case in which it lay upon the right side, and had always been in that position. Its action was natural.

A variety of causes may tend to push it out of its place, as water in the cavity of the pleura. In such cases, it will return to its place when the water is drawn off or absorbed.

DISEASES OF THE ABDOMINAL CAVITY.

Under the above head I shall consider most of the diseases which occur in the great cavity below the diaphragm, called the abdomen or belly. These affections are quite important, and make up a considerable part of the ills we suffer from disease.

Before speaking of these diseases, however, I will call the reader's attention to a profile view of the relative position of the several organs lodged in this cavity.

Fig. 94.

In Fig. 94, L is the *liver*, S the *stomach*, C the *colon*, R the *rectum*, B the *bladder*, P D the *pancreas*, and I the *intestines*. The double lines, folded back upon each other, and surrounding most of the organs, represent the *peritoneum*, a membrane which lines the great cavity of which I am speaking.

It will be well, too, before proceeding further, to make the reader acquainted with the names of certain *regions* of the abdomen which he will find constantly spoken of in medical books. I have not used these terms much in my book; but it will be convenient to be acquainted with them. Physicians who are careless in their readings, are not always familiar with their exact locality.

In Fig. 95, the abdomen is divided into nine different regions by the drawing of two parallel lines up and down, 2, 2, and 3, 3, and two lines across, 4, 4, and 1, 1. This gives three regions above, three in the middle, and three below.

In the upper row, 6 is the *epigastrium*, or *epigastric region*, in which are the left lobe of the liver, and a portion of the stomach; 5, on the

right side, is the *right hypochondrium*, in which is the right lobe of the liver; and 5, on the left side, is the *left hypochondrium*, which contains the spleen, and a portion of the stomach and liver.

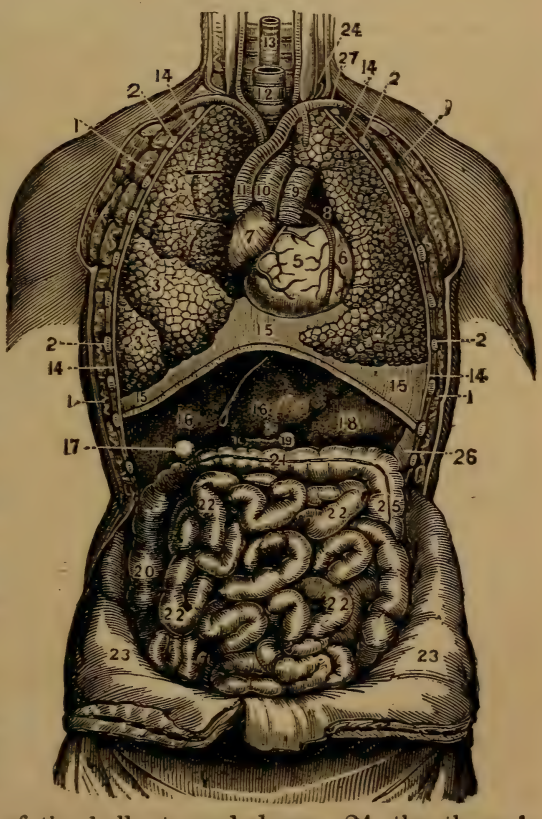
Fig. 95.

In the middle row, 7 is the *umbilical region*, which contains the small intestines. On the right side, 8 is the *right lumbar region*, which holds the right kidney and the ascending colon; and 8, on the left, is the *left lumbar region*, which contains the left kidney and the descending colon.

In the lower row, 9 is the *hypogastrium*, or *hypogastric region*, which contains a portion of the small intestines and bladder. On the right, 10 is the *right iliac fassa*, containing the *cæcum* or *caput coli;* and 10, on the left, is the *left iliac fassa*, containing the sigmoid flexure.

And now I may as well present, in Fig. 96, a front view of many of the organs both in the chest and abdomen: 1, 1, 1, 1, are the muscles of the chest; 2, 2, 2, 2, the ribs; 3, 3, 3, the upper, middle, and lower lobes of the right lung; 4, 4, the lobes of the left lung; 5, the right ventricle of the heart; 6, the left ventricle; 7, the right auricle of the heart; 8, the left auricle; 9, the pulmonary artery; 10, the aorta; 11, the vena cava descendens; 12, the windpipe; 13, œsophagus; 14, 14, 14, 14, the pleura; 15, 15, 15, the diaphragm; 16, 16, the right and left lobes of the liver; 17, the gall bladder; 18, stomach; 26, the spleen; 19, 19, the duodenum; 20, the ascending colon; 21, the transverse colon; 25, the descending colon; 22, 22, 22, 22, the small intestines; 23, 23, the walls of the belly turned down; 24, the thoracic duct, opening into the left subclavian vein (27).

Fig. 96.



Acute Inflammation of the Liver.

The liver is the largest gland in the body. (See Fig. 31.) It lies in the right side, and at the top of the great abdominal cavity, directly under the midriff, and lapping upon the stomach. Fig. 94 shows its relative position. Its office is to take the superabundant carbon out of the blood. This carbon it unites with other elements and forms bile, the peculiar bitter substance, which is poured into the upper bowel, and greatly aids digestion.

The liver is liable to become inflamed from several causes, such as gravel stones, external violence, suppressed secretions, hot climates, inflammation of the duodenum, etc.

Symptoms. — These are sympathetic fever, with pain, and a sense of tension in the right side, inability to lie on the left side, difficulty of breathing, a dry cough, vomiting, and hiccup.

The pain is acute and lancinating generally, though sometimes dull and tensive. When sharp, it is like the stitch of pleurisy, and it indicates that the peritoneum which covers the liver is inflamed. When dull, it is the body of the organ which is suffering. When the convex surface of the liver is the seat of the disease, the pain is apt to run up to the right collar-bone, and to the top of the right shoulder. Breathing, coughing, and lying on the left side, increase the pain. A soreness is felt by pressing over the liver. The pulse is full, hard, and strong, the bowels are costive, and the stools are clay colored, owing to not being tinged with bile, — this having stopped flowing. The tongue is covered with a yellow, dark brown, or even black coat, and there is a bitter taste in the mouth.

Explanation. — The bile, secreted by the liver, is poured into the upper bowel, and gives the brown or the yellow color to the contents of the bowels. When the liver is inflamed, it cannot work, — it secretes little or no bile, and the discharge from the bowels lose their color. The bile is slightly physical, and when it ceases to flow into the bowels, they become bound or costive. When the liver does not work, the bile has to be taken out of the blood by the kidneys, and the urine becomes of a deep yellow color. Much of it goes out through the skin, too, which is likewise yellow, and the sweat becomes so yellow as to stain the linen.

Treatment. — Apply wet cups or leeches over the liver pretty freely.

Purgatives will also need to be used pretty freely at first. Those which produce watery stools (31) (247) (34) will be of the greatest service.

After the cups and purgatives have been thoroughly used, blisters will be useful, and it will be better to apply several in succession, rather than to keep the first one open. Or, in the milder cases, a mustard poultice may be applied over the whole side, and even along the spine.

Frictions over the stomach and liver with the nitro-muriatic acid,

and a foot bath of the same, will sometimes do well. The acid should be reduced with water to about the strength of sharp vinegar. Water a little soured with this same acid makes an excellent drink for the patient.

Perspiration should be induced by the spirit vapor bath, and kept up gently by the tincture of the American hellebore, from three to ten drops every hour. Or, the same thing may be done by prescription (126).

When the urine is small in quantity and red, give some diuretic, as infusion of marshmallow root, pumpkin seeds, or trailing arbutus.

The diet should be rice-water, gruel, and toast-water. While getting up, it may gradually be improved, and some light tonics (49) (58) (64) be added to it.

Chronic Inflammation of the Liver.

There are few chronic diseases for which the physician is more often consulted than this. In the warm climate of the South, in the bilious districts of the West, and indeed even in the Middle and Eastern States, it meets us continually, and demands our attention. That it is difficult to cure must be admitted; but a constant familiarity with chronic diseases, for several years, has convinced me that it is generally curable.

Symptoms.— A sense of fulness and weight in the right side, with some enlargement, and shooting pains felt in the same region, particularly when it is pressed, with pains in one or both shoulders, and under the shoulder blades; uncomfortable sensations when lying on the left side; yellowness of the skin, eyes, and urine; bowels irregular, loose, or costive; appetite disturbed; sometimes a dry, hacking cough; shortness of breath; tongue whitish, and brown or yellow towards the root; a bitter and bad taste in the morning. The urine deposits a sediment on standing. There is generally a low and desponding state of mind, with irritability and peevishness of temper.

The skin is often covered with yellow spots, and with a branny substance. The various symptoms of dyspepsia are often present. The nervous system is generally much disturbed, and there is a disinclination to apply the mind. There is frequently a great dread of imagined evil, supposed to be impending.

Treatment.— This does not require to be as active as that for the acute form of the disease.

If there be much tenderness of the liver, begin with mustard poultices, and the compound pills of podophyllin, or the compound pills of leptandrin, or (36).

I have abandoned the use of mercury in this disease, as in most others; but if any prefer to use it, the blue pill (52) will be found the most useful form.

The compound tar plaster placed over the liver, in bad cases, is often very serviceable.

An alterative (138) (146) will be found useful.

The daily alkaline sponge bath must on no account be omitted. Vigorous friction must follow it. Vigorous constitutions will bear the shower bath; in such cases it may, occasionally, take the place of the sponge bath.

The diet must be simple, yet nourishing and wholesome, — and embracing but a small amount of fat, — as this is composed largely of carbon, and the liver is unable to remove what is already in the blood.

Especially and above all, out-door exercise must be taken to the full amount of the strength, and the thoughts be occupied with cheerful subjects. Let the hot sun be avoided, and the summer exercise be taken in the cool hours of the day.

The recovery from this, as from all other chronic diseases, must necessarily be slow.

Acute Inflammation of the Spleen. — *Splenitis.*

The spleen is in the upper part of the belly, on the left side, opposite the liver. It is subject to acute inflammation, which is known by a pain just under the short ribs on the left side, also by swelling, soreness to the touch, and by more or less fever. The pain often shoots up through the midriff and to the left shoulder. There is a short, dry cough; a feeling of tightness about the heart; a sickness at the stomach, and vomiting; and a discharge frequently of black blood from the bowels. The urine is scanty, is passed with some difficulty, and is high colored.

This disease appears most frequently in hot climates, and is often connected with intermittent fevers.

Chronic Inflammation of the Spleen.

This prevails most in fever and ague districts, and is a frequent result of chills and fever. It is generally very stubborn, often lasting many years.

Symptoms. — A feeling of weight, tightness, and sometimes pain in the left side, — the pain being increased by pressure, or an attempt to lie on the left side. The organ sometimes enlarges very much, so that it can be felt by the hand. This enlarged mass passes under the common name of "ague cake." There are sometimes numbness, weakness of the legs, difficulty of breathing, palpitation of the heart, inability to exercise much, obstinate constipation, vomiting of food, piles, dry skin, tongue coated white or red, low spirits, and occasionally dropsical affections.

During the chill in fever and ague, the spleen becomes enormously loaded with blood. Surfeited and stretched in this way again and again, it is not strange that the organ should become diseased.

Treatment. — This should be about the same with the treatment for acute and chronic inflammation of the liver.

After the active symptoms of inflammation are subdued, the warm bath may be used once or twice a week.

In the chronic form of the disease, counter-irritation with the compound tar plaster, with mustard poultices, croton oil, or tincture of iodine, will be particularly needed.

Among medicines, muriate of ammonia (53) has a high reputation. To keep the bowels open, podophyllin, quinine, and nux vomica (46), have a fine effect. Iron may be given (73) when the patient is bloodless and pale.

Jaundice.—*Icterus.*

THE jaundice is a very common disease, and to be known, needs only to be seen.

Symptoms. — The most prominent symptoms are, yellowness of the skin and whites of the eyes, saffron-colored urine, and whitish or clay-colored stools. So full is the urine of bile, that a piece of white linen, dipped in it, receives a bright yellow tinge.

Beside these leading symptoms, there are impaired appetite, a loathing of food, the sense of a load at the pit of the stomach, sourness of stomach, sometimes sickness and vomiting, a bitter taste in the mouth, disinclination to move about, sleepiness, a dull pain in the right side, which is increased by pressure.

The entire body of a person who has died of jaundice, including bones, muscles, and membranes, are found to be full of bile, and colored yellow.

Explanation. — The bile flows into the upper bowel, a little below the stomach, through a duct or tube about as large as a goose-quill. This little tube or vessel receives the bile from a smaller tube, called the hepatic duct, and from another which goes to the gall-bladder, called the cystic duct.

These little tubes sometimes get obstructed or plugged up by sticky, thickened, or hardened bile, or by gall-stones, formed in the liver, and the bile finding no outlet through its natural channels, is taken up by the absorbents, distributed over the system, and produces the yellowness we witness. When these ducts and the gall-bladder are filled and stretched by this thickened and hardened bile, they become tender and sore. Hence the sore feeling in the side when pressure is made.

There is another explanation of the way in which the yellowness of jaundice is produced, and it matters not whether it, or the one just given, be adopted. It is this: The bile is formed by the blood, and not by the liver. The office of the liver is to draw or strain off the bile from the blood. And when this organ is inflamed, or gets sluggish and will not work, the blood is not relieved of its yellow freight. The bile accumulates and in attempting to escape through other channels, it lodges in the various tissues, particularly in the skin.

Treatment. — If there be much inactivity of the liver, the treatment may begin with an emetic (1) (2) (4).

An infusion of thoroughwort, drank freely every day, is a valuable remedy. The inner bark of the barberry steeped in cider, or this article compounded with others (286) (287) will be found excellent.

The diet should be plain, wholesome, and nourishing, but composed mostly of vegetable articles, particularly green vegetables and berries when they are to be had.

Cold water should be the principal drink; or drink and medicine may be combined in the shape of five drops of muriatic acid, and three drops of nitric acid, dissolved in a tumbler of water slightly sweetened. This is generally a pleasant drink, and will assist very much in the cure.

The warm bath once or twice a week, and the alkaline sponge bath every day, with smart friction, must not be omitted.

When jaundice is caused by the passage of gall-stones through the bile duct, there is sometimes terrible pain and suffering, — the stone, occasionally, being as large as a nutmeg, and forcing its way through a quill-sized tube. So great is the distress that the patient sometimes rolls upon the floor in agony. To alleviate this pain, large doses of opium, laudanum, or morphine, are required. A large teaspoonful of bicarbonate of soda dissolved in a tumblerful of hot water is an excellent remedy if drank at a single draught. It relieves the acidity of the stomach, and acts as a fomentation to the internal seat of the pain. Mustard poultices, or warm fomentations, over the seat of the pain, are required. The warm bath is excellent.

The acid bath, made by mixing three parts of muriatic acid with two parts of nitric acid, and adding as much of this mixture to water as will make it about as sour as weak vinegar, is valuable in jaundice. Only a quart of water need be taken; and the solution should be applied with a sponge. It is of the right strength, if it produce a slight tingling of the skin.

Gall Stones.—*Biliary Calculi.*

These are concretions, or hardening of bile into masses of all sizes from that of mere grains, to that of a nutmeg. Fig. 97 is a specimen of them. They are found in the gall bladder, the cystic duct, the hepatic duct, and are sometimes precipitated from the bile after it has passed into the bowels. In passing through the ducts, if of considerable size, they produce intense pain, particularly if they are jagged upon their surface.

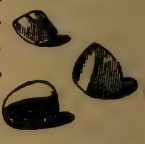


Fig. 97.

These stones, so called, are composed, chemically, of cholesterine, bile pigment, choleic acid, choleate of soda, mucus, earthy salts, and margarin and its compounds. A nucleus seems to be first formed, and then a gradual accumulation takes place upon its surface.

Symptoms. — An almost constant uneasiness in the right hypochondriac region, with spasms of pain, coming on suddenly, and lasting for a time with great severity, and then subsiding. The pain is caused

by a stone being suddenly forced into the duct and moving forward in it, and it subsides when the stone either stops, or gets through the duct. When the stone reaches the bowels, it passes off with the stools.

The patient generally has a pale, sallow complexion, a small, feeble pulse, and often suffers from nausea and vomiting, and from restlessness and hurried breathing.

Treatment. — To reduce the spasm, give Dover's powder in full doses, or chlorodine. Also, apply mustard over the right hypochondrium and stomach, and follow it with hot fomentations with hops, or use wet cups.

If the stomach is irritable, give the neutralizing mixture until it moves the bowels. A warm infusion of thoroughwort, given to the extent of producing vomiting, will sometimes do well, and lobelia enough with it to relax the duct may be useful.

To relieve the acidity on which the formation of these stones so often depends, a neutralizing preparation (338) may be given for a long time, the diet, in the mean time, being well regulated. The sponge bath, with saleratus and water, should be taken daily, followed by brisk rubbing; and free exercise in the open air should on no account be omitted.

Acute Inflammation of the Stomach.—*Gastritis.*

This is a rare disease. It is generally induced by irritating and corrosive substances taken into the stomach. Poisons, as arsenic, aquafortis, corrosive sublimate, and the like, are the most common causes of it. Blows, sudden stoppage of sweat, and excessive use of ardent spirits, may also excite it.

Symptoms. — It is marked by burning pain in the stomach, thirst, restlessness, anxiety, constant vomiting, prostration of strength, a quick, hard, and small pulse, incessant retching, a sunken countenance, hiccough, cold hands and feet, and a damp skin.

Treatment. — If the inflammation be excited by poison, the remedies named under antidotes for poisons must be first employed.

The poison being neutralized or thrown off, the inflammatory condition must be combatted with the remedies usual for such states. Mustard poultices to the feet, along the spine, and particularly over the pit of the stomach, will be among the first things to be employed, and should be followed by hot fomentations of stramonium leaves or hops, — both the fomentations and the poultices to be repeated as occasion may require. Dry cupping over the region of the stomach is useful.

Drinks. — Cold water, bread-water, rice-water, arrow-root gruel, infusion of slippery elm bark, and of marshmallow. These should be taken in very small quantities, — say a teaspoonful at a time, — about twenty drops of tincture of aconite root being added to half a tumblerful. Lumps of ice may be held in the mouth, and occasionally swallowed.

Injections. — Emetics and physic are not proper, but injections (248) (253), or simply soap suds, will be required.

The remedies must be pursued until all tenderness has disappeared from the pit of the stomach.

While the patient is recovering, great care must be taken not to overload the stomach with food. Arrow-root, sago, and milk are among the first articles to be allowed. After these, will come gradually beef-tea, chicken broth, soft-boiled eggs, and beef-steak, until the whole diet can be restored.

Chronic Inflammation of the Stomach.

This is a much more common disease than the preceding; indeed it is very common. Though it does not put life in immediate danger, it perverts the feelings of the stomach, and causes many of the symptoms of indigestion. Dyspepsia, however, is a different complaint, and not necessarily connected with inflammation.

Symptoms. — There is generally pain in the stomach, which is increased by the presence of food, and by external pressure. The pain is sometimes felt only during digestion. The fermentation of the food in the stomach generates a gas, which is frequently belched up. This is what is meant in common language by having "wind in the stomach," and "belching wind." The meals are frequently vomited up; the appetite is fickle, sometimes voracious, and again nearly absent; the thirst is likewise variant; the tongue is white in the centre, and red at the sides and tip, — sometimes smooth and red all over, like a slice of raw beef. The urine is scanty and high-colored.

The disease is very liable, if badly managed, to lead to ulceration of the coats of the stomach, and thence to a fatal end; for an ulcer may penetrate the walls of the stomach, and let its contents into the abdominal cavity, which would excite an immediately fatal inflammation.

Treatment. — If there be much tenderness, we may apply leeches over the stomach. With less tenderness, counter-irritation will answer, — as blisters, croton oil, mustard poultices, the compound tar plaster, or dry cups.

The skin of the whole surface should receive special attention. The warm or the cold bath should be used often, according to the strength of the patient. When the reaction is good, a cold compress bound upon the stomach every night, will do much to bring relief.

The diet cannot be too carefully managed. While there is considerable tenderness, the nourishment must be of the most simple and unirritating kind, — consisting of little more than the most bland nutritive drinks; and even these should be taken in small quantities at a time. Gum arabic water, rice-water, barley-water, arrow-root gruel, tea, and toast without butter, will be amply sufficient to keep soul and body together, and will, in two or three weeks, generally starve the enemy out of his quarters. After this, a more nourishing diet may gradually be resumed.

Indigestion.—Dyspepsia.

Dyspepsia is a disease of civilization. Savages know nothing of it. It is the costly price we pay for luxuries. All civilized nations suffer from it, more or less, but none so much as the people of the United States. It is here, in the new world, that the disease has become domesticated, and we, as a people, who have threatened to monopolize its miseries.

Few disorders inflict upon their victims greater suffering; yet it is not particularly dangerous, and it is even doubtful whether it tends very much to shorten life, unless the length of life be judged to consist in the sum of happiness enjoyed, — in which case, few complaints shorten it more.

Symptoms. — These vary very much in different stages of the disease, and in different persons. In general the complaint begins with a sense of fulness, tightness, and weight in the stomach, sooner or later, after meals, and a changeable, diminished, or lost appetite. Occasionally, the appetite is craving, and when, in obedience to its promptings, a large meal is taken, there is pain in the stomach, with general distress and nervousness, and sometimes vomiting. Flatulency and acidity are common, with sour and offensive belching of wind; and very often there is a water-brash, or vomiting of a clear, glairy fluid when the stomach is empty. Diziness is a prominent symptom. There is a great deal of what patients call an "all-gone" feeling at the pit of the stomach, — a weakness so great at that particular spot, that it is very hard to sit up straight. There is a bad taste in the mouth; the tongue is covered with a whitish fur; there is headache, heartburn, palpitation at times, high-colored urine, and tenderness, now and then, at the pit of the stomach. The bowels are generally irregular, sometimes very costive, at other times loose, when portions of food are passed off undigested.

Nervous Complication. — Such are the symptoms in a case of simple disorder of the stomach, when no other part of the system is materially involved. This is *indigestion*, well-marked, and distressing enough; but it is only a part of what is understood by a case of modern *dyspepsia*. In *this*, either the indigestion, in its course, disturbs and involves the nervous system, or the nerves become themselves disordered, and produce the indigestion. Sometimes one happens, sometimes the other, it matters not which; both are present, — the affection of the stomach and of the nerves, in a case of thorough dyspepsia. To make out a full case, in its tormenting completeness, we must add to the above symptoms, great depression of spirits, amounting at times to complete hopelessness and despondency; a dread and fear of some impending evil; a lack of interest in passing events; unwillingness to see company or to move about; an irritable and fretful temper; a desire to talk of one's troubles, and nothing else; a sallow, haggard, sunken, and sometimes wild expression of countenance; a dry, wrinkled, and harsh skin, with unrefreshing sleep, disturbed by

all sorts of annoyances and difficulties, such as shipwrecks, falls down precipices, and nightmare.

The man who has all these symptoms, or any considerable portion of them, has *dyspepsia*, and is about as miserable as if all the sorrows of life were electrical currents, and were running through him continually.

Causes of Dyspepsia. — To healthy digestion, three conditions are especially necessary, — that the food should be well chewed and mixed with saliva before it is swallowed; that the stomach should pour out and mix with it the right amount of healthy gastric juice; and that it should be well *churned* while in the stomach.

It is well known that the first of these conditions, a thorough chewing of food is rare in this country. We eat too fast; we do not masticate our food; we *bolt* it whole.

This is the first cause of dyspepsia, and it is the fruitful mother of causes. It furnishes the occasion for eating too much; for when the food is swallowed with such rapidity, the stomach is taken by surprise, as it were; it cannot secrete gastric juice fast enough to be diffused through the fast-growing mass; and the appetite does not decline until a great deal too much is taken. The coats of the stomach, being stretched unnaturally, do not pour out the gastric juice at the right time, or as much of it as is wanted, and what there is, is altered in quality.

Moreover, the stomach being overburdened, cannot turn over and churn its contents properly.

To fast eating, we may add, high-seasoned dishes, too stimulating for the stomach; eating between meals, and at unseasonable hours, — particularly at bed-time; excessive use of strong drinks and tobacco; habitually sitting up late at night; inactive habits of body; and excessive use of the mind.

No causes of dyspepsia are more active than those which disturb and fret the mind. It is surprising how suddenly any mental agitation will put an end to the appetite, and suspend digestion. And when these mental disturbances are protracted, when care becomes a daily and hourly companion, dyspepsia is almost sure to show itself. Considering the numerous causes of unpleasant mental excitement which we have in the politics, the business, the ambition, the family jars, etc., of this country, it is a wonder that dyspepsia is not even more prevalent. It is hard for the sensitive to escape.

Urinary Deposits. — Before speaking of the treatment of dyspepsia, it will be proper to take notice of certain deposits in the urine, to which persons suffering from this complaint are liable, and the discovery of which, will, in many cases, indicate the treatment.

Many dyspeptics have acid urine, which is loaded with *crystals of oxalate of lime*. These persons are much depressed in spirit, and look upon the dark side of everything. They are painfully disturbed by small annoyances, are irritable in temper, incapable of exerting themselves, look with dread upon the future, and generally have the dark and dingy look of the face, which indicates functional derangement of the liver.

The most of these crystals are octahedral in form, and in the field of a good microscope, are beautiful objects for inspection. (Figs. 98 and 99.) To obtain them, take a portion of urine passed in the morning (*urina sanguinis*), and let it stand till a deposit takes place. Pour off the upper portion of the urine; put a part of the remainder in a watch glass, and gently heat it over a lamp. The heat will cause a deposit of the crystals.

FIG. 98

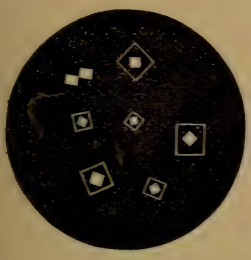


FIG. 99.

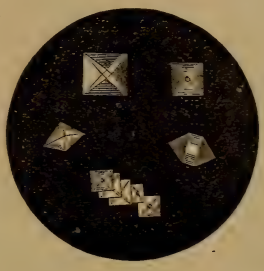


FIG. 100.

The oxalate of lime is frequently found in urine, having the form of dumb-bells. When examined by polarized light, they appear beautifully colored and striated. (Fig. 100.)

The urate of ammonia, and uric acid gravel, are likewise found in large quantities, in the urine of many dyspeptics. Some are exhausted by them, and reduced almost to skeletons, and to a wretched state of health, — having boils, eruptions, etc.

To find the urates, put a little of the urine containing the deposit in a test tube, and warm it gently over a lamp. *If the deposit readily dissolve*, it is probably urate of ammonia (Figs. 101 and 102), and may then be examined under the microscope, to make the matter sure.

FIG. 101.

FIG. 102.

To find uric or lithic acid, let morning urine stand until a solid deposit has sunk to the bottom; then pour off the liquid, and place some of the solid portion upon a glass, and examine it with a microscope, and if this acid be present, its peculiar crystaline forms (Fig. 103) will be discovered, either alone, or mixed with urate of ammonia.

In those cases in which there is a great prostration of the *nervous*

system, with a loss of sexual power, bad feelings in the head, perhaps pain and weakness across the loins, and a tendency to consumption, we may suspect the presence of the triple phosphates in the urine. Phosphorus is one of the elements of the brain and nerves, and when there is a constant drain of this element through the kidneys, the nervous system is gradually exhausted. To find the triple phosphates, put some morning urine in a glass vessel, and let it stand till a sediment has gone to the bottom. Put some of the sediment in a test tube, and warm it gently over a lamp. If the warmth do *not* dissolve the deposit, add to it a little acetic acid; *if the deposit dissolve in the acetic acid, it probably consists of earthy phosphates.* This is then to be examined under the microscope to ascertain whether it is the phosphate of lime, the triple phosphate, or a mixture of both.

Fig. 103.

Fig. 104.

Fig. 105.

Fig. 106.

Fig. 104 shows us the prismatic crystals of the triple phosphate. In a few rare cases, these are penniform (Fig. 105). Fig. 106 gives us another specimen of the crystals of the triple phosphates, as they appear under the microscope, mixed with amorphous particles of phosphate of lime. If an excess of ammonia be added to the urine, the crystals become star-like, and foliaceous, as in Fig. 107.

Fig. 107.

Treatment of Dyspepsia. — As there are few complaints which distress the patient more than dyspepsia, so there are few which give the physician more trouble. Generally our art has failed upon it because too much has been required of us. We have not merely been asked to cure the disease, but to do it while the patient continues the indulgence of his appetite, or his excessive application to business or study. It has

been expected of us, that with medicine we should contravene the laws of nature, and restore health while the causes of disease are in full activity.

This complaint is often brought on by not keeping the bowels open. To cure it, therefore, one of the first things to be done is to remove costiveness and regulate the bowels.

One of the very best articles I know of to remove constipation is Mettauer's Aperient. I have placed it in the department of Pharmacy; it ought to be in the United States Dispensatory. Taken immediately after meals, in doses of a teaspoonful, it corrects acidity of the stomach, it gently opens the bowels, and when its action is over, will be found to have diminished the costiveness, rather than increased it, as most kinds of physic do. It is excellent in the bilious forms of dyspepsia, — acting finely upon the liver, — particularly if a few drops of aqua regia in water be taken before meals, — the aperient being taken after.

If *piles* exist, this mixture will be objectionable on account of the aloes, and the fluid neutralizing extract may take its place. Sweet tincture of rhubarb and soda (37) is sometimes preferable to the aperient.

Several other preparations (38) (289) (39) (290) will be found useful to remove costiveness and debility of the stomach.

For acidity, beside the remedies already mentioned, prepared charcoal may be used, in teaspoonful doses, or carbonate of magnesia, or fluid magnesia, or trisnitrate of bismuth. A good remedy is pulverized guaiacum, rhubarb, prepared charcoal, and carbonate of magnesia, equal parts; also (28) (37) (38) (42). If crystals of oxalate of lime be found in the urine, give a few drops of aqua regia, in water, three times a day.

Hygienic Treatment. — The diet must be managed with great prudence. Food must be taken in such quantities only as the stomach can digest, however small that quantity may be; and it must be taken slowly, and well chewed. No article should be touched, or thought of, which disagrees with the stomach. Costiveness may frequently be entirely removed by eating no bread except that made from unbolted wheat flour, commonly called Graham bread, or by making one of the three daily meals of boiled cracked wheat, with milk or molasses. If the triple phosphates be found in the urine, there is a special reason why the unbolted flour, or the cracked wheat should be used. The wheat grain abounds in phosphorus, the largest portion of which is in the bran, and this is much needed when the kidneys are robbing the brain of its phosphoric element.

Not too much Brain-work. — It is important that the brain and nervous system should be relieved of the burden of too much work, and that the thoughts should be turned into the most agreeable channels. If the patient would get well, the disinclination to move about, and see company *must* be resisted. In many cases, dyspeptics are like sea-sick persons, — feeling as though they would rather go overboard than move. In such instances, friends must not be harsh with

them, and frown upon their listlessness as if it were a fault; but rather treat them affectionately, and beguile them out by all sorts of pleasing enticements. Exercise *must* be had, every day, and be connected, if possible, with an object, so that it may be performed cheerfully. It is important *to engage the mind in the exercise;* and for this purpose, some contested game is very useful, as playing at billiards, rolling nine-pins, pitching quoits, or, where the strength will permit, playing ball.

Cheerfulness. — Nothing does more to drive away dyspepsia than a cheerful, lively, and even *mirthful* state of mind. All the nervous influences sent from the brain to the stomach should be of the most agreeable kind. Some people think it vulgar to laugh. Let such stand with long faces in life's shadows, if they choose. As a general rule, the best men and women laugh the most. Good, round, hearty, side-shaking laughter, is health for *everybody;* for the dyspeptic, *it is life.*

Dyspeptics who have a taste for it, and can endure the expense, should travel. A voyage to Europe, and a year spent in seeing the wonders of the old world, will generally cure the most stubborn case of indigestion. This, however, depends upon circumstances. For those having the finer organizations and the higher natures, extensive travelling is sometimes indispensable. The narrow circle of thoughts, associations, and things, in their own neighborhood, do not fill the compass of their wants; their many-sided faculties need to be drawn on by the large variety to be found only in travel. Their large and impressible natures want to be filled full in order to drive out disease, and it takes a world, or a considerable part of it, to fill them. The dyspepsia of such natures is not comprehended by the multitude, and even physicians are often amazed that their narrow prescriptions do not reach it.

Heartburn. — *Cardialgia.*

This is a gnawing and burning pain in the stomach, attended by disturbed appetite. It is generally caused by great acidity of the stomach, and is a symptom of dyspepsia, and often afflicts pregnant women. Whenever too much food is taken, it is liable to ferment, and become extremely sour, — causing heartburn. In such cases, vomiting often occurs; and what is thrown up, is sour, and sometimes bitter.

Treatment. — Immediate temporary relief may be obtained by swallowing a teaspoonful of soda, magnesia, or chalk, in a tumbler of cold or warm water. Fluid magnesia, or lime water, will answer the same purpose. If there is wind in the stomach, as well as acidity, a teaspoonful of the aromatic spirit of ammonia, or (135), will often still the uneasiness in a moment.

To cure the complaint, the stomach must be strengthened by the remedies directed for dyspepsia.

Spasm or Cramp in the Stomach.— *Gastrodynia.*

Though generally of shorter duration, this is more violent than heartburn. It is attended by a sense of fulness, by anxiety, and by great restlessness. In females, hysterical symptoms are often coupled with it. Great quantities of air or gas are generally expelled, and the pain shoots through to the back and shoulders.

Treatment. — A strong purgative injection (248) will often bring immediate relief. The sweet tincture of rhubarb and soda (37), with a few drops of tincture of cayenne mixed with it, will often bring speedy relief. So will a mustard poultice laid upon the stomach. The mustard poultice is a remedy of great excellence, in many cases. It deserves to be called the poor man's friend.

Water Brash.— *Pyrosis.*

This consists in a discharge from the stomach, generally in the morning, of a thin, glairy, watery fluid, sometimes insipid, at other times, sweetish, and at still others, sour. A burning heat or pain in the stomach attends, and seems to be the immediate cause of the discharge. The discharge appears to be the natural mucus of the stomach, which is poured out in large quantities in consequence of a kind of catarrh of its mucous lining. The amount thrown up varies from a spoonful to a pint or more.

The complaint is caused by a poor innutritious diet, or by whatever causes the blood to become thin and watery.

Treatment. — Ten or fifteen drops of water of ammonia, in half a tumbler of water, will quiet the distress, and check the discharge. The most effectual remedy I am acquainted with for breaking up the discharge, is the trisnitrate of bismuth, taken at meal times, in from twenty to thirty-grain doses, three times a day. The compound powder of kino is a valuable remedy. The compound tincture of senna and the tincture of balsam of tolu, in equal parts, and administered in tablespoonful doses, are sometimes useful. The tincture of nux vomica is a good remedy.

To restore the blood, some of the various preparations of iron (74) (80) (73) (316) will be required.

The diet should consist of easily-digested, nutritious food, — as soups, broths, fresh meat, potatoes, and unbolted wheat bread.

Vomiting.

This occurs under a great variety of circumstances. It may be induced by acidity of the stomach, by irritability of the stomach, by distress of mind, by injury of the brain, by offensive odors, and by all organic diseases of the stomach.

Treatment. — Generally, it is cured by treating the disease which induces it. But in many cases, it persists very obstinately, and may become the chief thing to be attended to. In such cases, it may require a sixth or quarter of a grain of morphia to check it. But gen-

erally some aromatic, as ginger, spearmint, peppermint, or spice tea, will put an end to it. Some cordial or stimulant, as brandy, champagne, tincture of ginger, paregoric, elixir solutis, or cherry brandy, will answer well. Strong coffee, without sugar or milk, will, in some cases, act like a charm. If it is dependent on acidity, the remedies are given under "dyspepsia." If caused by irritability of stomach, a pill of extract of belladonna and ipecac (339) will do well.

While vomiting, the patient should lie still in bed, and in bad cases, a mustard poultice should be placed upon the stomach.

The vomiting of children may sometimes be stopped by wetting a piece of cloth with laudanum, and laying it upon the pit of the stomach.

Seasickness.

This is the great terror of persons, who, for the first time, cross the ocean. It is said that dark complexioned persons suffer more from it than others.

If it cannot be entirely prevented, it may be mitigated by lying flat upon the back. To lie on deck, in the open air, is much better than lying in the close air of the cabin, or state room. A wineglass of brandy, or from ten to forty drops of laudanum will relieve the sickness very much. For a child, it is sometimes sufficient to wet a cloth with laudanum, and lay it upon the pit of the stomach. Morphine is sometimes even better than laudanum. Creosote, one drop at a dose, made into a pill, is excellent. Ten drops of hartshorn, in half a tumbler of water, is good for some. But the best known remedy is chloroform, taken in doses of from forty to eighty drops, suspended in water by means of a little gum arabic.

Milk Sickness.

This disease prevails in the West, chiefly in the neighborhood of level, heavily-timbered, rather wet oak land.

The cattle, horses, and sheep, which range in these lands, are frequently attacked by a disease which the people call the *trembles*. It is supposed to be produced by eating some plant growing upon those lands, as cattle which feed in the neighboring regions are free from it until they find their way into these low grounds. It has been suggested that the offending plant may be the *poison ivy* (*rhus toxicodendron*). Be this as it may, the calves, soon after sucking cows which have run in these grounds, are seized with trembling, and frequently die of the disease. Dogs which lap the milk, are affected in a similar manner. Children drinking it, leave the table and vomit. Upon grown persons the effects are more severe, but not so sudden. The eating of the beef, mutton, or veal, of affected animals, brings on the same disease.

Symptoms. — The disease sets in with sickness at the stomach, which is preceded by general debility, more particularly of the legs. There is nausea, vomiting, and the breath is so offensive and peculiar that those acquainted with the complaint immediately recognize it from this smell.

These existing for weeks, constitute, in some cases, the whole of the symptoms. In other cases they are more severe, being attended by chills and flushes, great oppression about the heart, anxiety, deep breathing, heat in the stomach compared to fire and boiling water, violent retching and vomiting, alarming beatings of the heart, and throbbings of the large vessels, and cold extremities, — producing, all together, extreme distress.

In most cases, the vomiting returns every hour or two, attended by great burning at the pit of the stomach, the substance thrown up having a peculiar bluish-green color, and a sour smell. As soon as this discharge takes place, the patient falls back upon the pillow, and lies easy until another turn comes round. The tongue is covered with a whitish coat, the bowels are obstinately costive, and the pulse is small and quick.

Treatment. — It is believed that the neutralizing mixture, given in tablespoonful doses every time the nausea and burning sensation are felt, is the most effectual remedy yet used. It relieves the acidity, and seems well adapted to allay the irritation. Some antibilious physic (40) to move the bowels should also be given.

Beside these remedies, a mustard poultice should be put upon the stomach, and hot bricks to the feet, and the patient be kept still for some hours. The diet should be very mild, only toast water, rice water, or thin gruel.

Acute Inflammation of the Peritoneum. — *Peritonitis.*

This disease affects the extensive membrane which lines the whole inside of the belly, an extension of which forms the omentum or apron. It is an inflammation to which women are much exposed after confinement, and is known, in such cases, as child-bed fever. It is common among men, also, and is a grave disease.

Symptoms. — Like other forms of fever and inflammation, it is preceded by chills, with increased heat of surface, thirst, full, strong, and frequent pulse, flushed face, and red eyes, dry tongue with red edges, dry skin, restlessness, short quick breathing, nausea and vomiting.

The pain is increased by the patient sitting or standing up, — the bowels being thus pressed against the inflamed membrane. Lying upon either side is painful for the same reason. To lie flat upon the back, with the feet drawn up, is the only endurable position. The patient lies *still*, for all movements give pain.

The pain in this disease is generally sharp, cutting, and pricking, but is not always equally intense. It is aggravated by the passage of wind along the bowel, by which the inflamed membrane is slightly stretched.

When the disease is advancing towards a fatal termination, the belly becomes greatly swollen and tense, — having to the hand a peculiarly tight, drum-head feeling; the pulse is rapid and feeble; the countenance is full of anxiety, and is pinched and ghastly; and a cold sweat breaks out.

Treatment. — Small doses of antimony, lobelia, or ipecac, to produce nausea, and a moisture upon the skin, is generally among the first things given. The tincture of veratrum viride, in five to ten-drop doses, repeated every hour, will accomplish the same thing more effectually than any other known article. For such purposes, I give it the first place among medicines. A large poultice of white bread, rye meal, or flax-seed, may be spread over the belly; or cloths wet with cold water, will be still better, if the patient be full-blooded, and naturally strong. The bowels should be moved at once by some active physic, as butternut, salts, magnesia, castor oil, or cream of tartar (20) (17) (18) (27), or by podophyllin, etc. (40) (41) (31).

The drinks should be lemonade, soda water, tamarind water, current jelly dissolved in water, and preparations (298) and (299). Indian meal gruel, toast-water, barley gruel, and the like, are the only allowable diet.

Chronic Inflammation of the Peritoneum.

When the acute inflammation of the peritoneal membrane is not successfully treated, it may run on for a time, and then subside into a lower grade of inflammation, called *chronic*, and in this state remain for an indefinite time. But it often arises independently of the acute disease, and attacks persons of both sexes, and of all classes and ages. Scrofulous children have it, and, wasting away under it to mere skeletons, are said to have *consumption of the bowels.*

Symptoms. — These are sometimes very obscure, and the advances of the disease stealthy. At first, there may be only a little soreness of the belly, so slight as not to be noticed except after hard work, or upon some wrenching motion. Generally, there is a sense of fulness and tension of the belly, although it may not be increased in size. After a time, it enlarges a little, and its tension or tightness increases, especially towards evening. By pressing carefully with the hand, a deep-feeling tension may be detected, giving to the hand a sensation as of a tight bandage underneath, with the skin and integuments sliding loosely over it. If water has been poured out into the abdominal cavity, its fluctuation may frequently be detected by pressing upon one side of the belly with the palm of one hand, and striking the other side with the ends of the fingers.

As the disease goes on, the features become sharp and contracted, and the countenance grows pale and sallow. Costiveness comes on, sometimes chills and fever, with debility, loss of flesh, cough, difficult breathing, hectic, and swelling of the legs.

Treatment. — Costveness, if present, may be relieved by Mettauer's aperient, or the neutralizing mixture, assisted by coarse bread, and boiled cracked wheat.

Daily bathing is specially necessary, particularly the alkaline sponge bath, with vigorous friction over the bowels. The warm bath once or twice a week, will be useful. In some cases, the wet towel laid

upon the bowels over night, and well covered by flannels, will afford relief; or the compound tar plaster may occasionally be used.

If there be dropsy of the belly, iodide of potassium (138) should be taken freely, and the skin made sore over the inflamed part, by tincture of iodine, well rubbed in, once a day.

If the patient be pale and bloodless, give iron, quinine, etc. (74) (75), and let the diet be nourishing; and if nervous symptoms be connected with the debility and paleness, add some nerve tonic (93) (81) (316).

Acute Inflammation of the Bowels.—*Enteritis.*

By inflammation of the bowels is generally understood an inflamed condition of the *mucous membrane which lines them;* but this, most commonly, is only a part of the disease; it involves, more or less, beside this mucous lining, the whole substance of the bowel.

Symptoms.— The disease begins with a chill, and with uneasiness and slight griping pains, which increase in severity until they are intense and burning. Pressure aggravates the pain, which is most intense about the navel, but extends more or less over the whole bowels.

From the beginning there is sickness at the stomach, and sometimes vomiting; there is loss of strength, costiveness, great anxiety, thirst, heat and fever, dry, furred, and red tongue, and but little urine, with pain in passing it. The matters passed from the bowels are dark and fetid; and the whole belly is tender and sore to the touch. The pulse is quick, hard, and small.

The stomach will be but little affected, comparatively, when the disease is at some distance from it in the lower portion of the bowels. Indeed, the nearness of the inflammation to the stomach, or its remoteness from it, may be judged pretty correctly by the degree of disturbance in that organ. The length of time after drink and medicines are swallowed, before they are vomited up, is a pretty good measure, likewise, of the distance of the disease from the stomach.

How to Discriminate.— This disease is liable to be confounded with colic, and with inflammation of the peritoneum. It is important to distinguish it from colic, particularly, for the treatment for that would aggravate this. In this disease, the pain is increased by pressure; in colic, it is not, but is rather relieved. In enteritis, the pain remits, but never ceases wholly, as it does in colic. In enteritis, the knees are drawn up, and the breathing is short; in colic, it sometimes gives relief to stretch the feet down, and the breathing is not altered.

To distinguish it from inflammation of the peritoneum, take notice that diarrhœa is much more common than in this latter complaint, while the pulse is not as quick, nor the pain as severe.

Treatment.— This should be very much the same as that recommended for inflammation of the peritoneum. Perhaps in both dis-

eases, it might be well to begin with covering the belly all over with leeches. As for taking blood from the arm, in large quantities, as recommended in most of the books, I cannot think it necessary.

The tincture of veratrum viride, in full doses, so as to keep up a free perspiration, cold compresses, mustard poultices, hot fomentations, poultices, blisters, soothing and quieting injections, and demulcent drinks, as slippery elm, marshmallow, flax-seed, etc., if judiciously applied, will do about all that we have it in our power to accomplish; and under such treatment, the patient will recover faster, and get up better, than when blood is freely drawn.

In this disease it is well to inquire if the patient has a hernia, for if so, it is liable to become strangulated without his knowledge. A strangulation of the gut may be the *cause* of the disease. When this happens, the complaint is very unmanageable. The bowel may possibly, in such case, be disentangled by applying a *large* dry cup; or, what is better, a number of small ones; but the tenderness of the belly makes the use of this remedy difficult.

Chronic Inflammation of the Bowels.

Like other chronic inflammations, this may follow the acute form, but it also results from various other causes, as unripe fruit, taking cold, drastic physic, and improper treatment of other diseases.

Symptoms. — Red end and borders of the tongue, dull pain in belly, increased by pressure and rough motion, abdomen either swelled or flat, skin dry and husky, feet and hands cold, small frequent pulse, thirst, loss of flesh, low spirits, urine scanty and high-colored, and dirty, slimy discharges from the bowels, from one to four times a day.

Treatment. — To begin with, blisters, or croton oil, or mustard poultices, or dry cups, if the tenderness is not great, or leeches if it is.

If the bowels are hot and feverish, bind a cold compress upon the belly over night, — covering it well with flannel. The warm bath should be used twice a week.

The diet must be of the most simple, unirritating kind, — beginning with a solution of gum arabic, rice-water, barley water, arrow-root or sago gruel, and gradually rising, as the symptoms improve, to beef-tea, mutton and chicken broth, tender beef steak, etc.

When the strength will permit, gentle exercise must be taken in the open air, but not on horseback, or in hard, jolting carriages.

As soon as the inflammation is subdued, some mild laxative (35) may be given, in connection with an infusion of wild-cherry bark, geranium, and Solomon's seal, equal parts.

Wind Colic.—Flatulent Colic.—*Interalgia.*

This is a severe and distressing pain in the bowels, — sometimes a stoppage, and a swelling about the pit of the stomach and the navel. What children call *belly ache* is a mild form of it. The wind passing

from one portion of the bowel to another, causes a rumbling noise. The pain is not increased by pressure; and this distinguishes it from the pain of inflammation. It moves about, too, from place to place, and is much relieved by the escape of wind up or down.

The complaint may be caused by a weakness in the digestive organs, by eating indigestible food, or unripe fruit, by costiveness, and by taking cold. Some persons always have the colic excited by eating certain kinds of fruit.

Treatment.— When the complaint is caused by an indigestible substance taken into the stomach, the offending matter should be thrown off by an emetic as soon as possible. If this does not bring relief, let it be followed by a dose of salts, salts and senna, compound infusion of senna, elixir salutis, elixir pro., or sweet tincture of rhubarb. If there is no sickness of the stomach, a little essence of peppermint or spearmint in hot water, or brandy, gin, or whiskey, in hot water, may prove sufficient to expel the wind, and relieve the pain. Ginger and hot water does well with some. If there be costiveness, and the pain is obstinate, let the bowels be unloaded by a stimulating injection (248) (249) (250).

Air-Swellings.— *Tympanites.*

It is quite common for persons in delicate health,— particularly females,— to have their stomach and bowels swell up, sometimes slowly, sometimes suddenly, so that they cannot bring their clothes together. They do not know what to make of it; it sometimes alarms them; and they ask their medical adviser what it means.

Explanation.— This is the meaning of it. It is neither more nor less, in many cases, than the air within the muscles and membranes swelling up and distending them in consequence of their being in a weakened condition. There are two ways in which the flesh may be caused to bloat. It may be caused by placing a cupping glass over it, and taking off the external air. When this is done, the air within seeks to fill the vacuum above, and lifts up the flesh. So, likewise, if the parts are weak, and lose their tone, they give way, and let more air into their substance, and they stretch and puff up.

But these swellings may occur from an accumulation of air within the bowels, and also within the abdominal cavity. This latter gives the belly a peculiarly hard feel, like the head of a drum, and when it is pressed upon with the fingers, no indentation remains.

Treatment.— If the air be in the intestinal tube, a stimulating injection may bring away the wind. It may be composed of one pint of infusion of peppermint, one gill of tincture of prickly ash berries, half a gill of tincture of castor, and a teaspoonful of ginger. The bowels of the patient should be rubbed for a long time; and in all forms of the complaint, it would be well to do this every day. Sometimes the wind may be drawn off by inserting into the rectum a long gum-elastic tube.

The best constitutional remedies are tonics, — iron, quinine, mineral acids, and bitters, (48) (55) (59) (60) (62) (63) (64) (71) (73).

Exercise in the open air, and a careful regulation of the diet will do much towards removing these troubles. Costiveness must be carefully guarded against.

Bilious Colic.

This is a dangerous disease. There is pain of a griping, twisting, tearing kind, — what the ancients called *atrocious pain.* It is chiefly about the navel, but sometimes tortures the whole belly. It comes and goes in paroxysms. Sometimes the abdomen is drawn in, at other times it is swelled out, and stretched like a drum-head. At first the pain is relieved by pressure; after a time the belly is tender to the touch. There is thirst and heat, and a discharge of bilious matter from the stomach. In the worst cases, the pulse is small, the face pale, the features shrunk, and the whole body covered with cold sweat. While the head is hot, the feet are cold. In advanced stages of the disease, the action of the bowels is sometimes reversed, and the fecal matter forced up through the mouth.

Causes. — Costiveness, irritating substances in the bowels, thick, vitiated bile, long exposure to cold, torpidity of the liver and skin, great unnatural heat, with dampness, etc.

Treatment. — Administer an active purgative injection immediately (251) (252). Internally, dioscorein, camphor, etc. (340), every fifteen minutes, till relief is obtained, — at the same time covering the whole belly with a large mustard poultice. A strong decoction of the wild yam root, drank freely, is a medicine of some value, — so is a decoction of scullcap and high-cranberry bark, equal parts. This latter article is excellent in spasmodic affections, on which account, it has gained the name of *cramp bark.* The sickness at the stomach may be allayed frequently by effervescing drafts, to which twenty-five or thirty drops of laudanum are added. Croton oil, given in one-drop doses, done up with crumb of bread, will sometimes succeed well as a purgative medicine; or castor oil and spirits of turpentine, equal parts, in two great spoonful doses, may be tried before the croton oil.

The warm bath is worth remembering, and trying, too, if the means are at hand. Hot fomentations of the bowels with a decoction of poppy leaves, stramonium leaves, hops, wormwood, boneset, or peppermint leaves, should not be overlooked. Bottles filled with hot water, or hot bricks rolled in flannel, should be placed at the back and feet, to promote perspiration.

Persons subject to this complaint, may derive advantage from one pill composed of extract of high cranberry bark, etc. (100), taken after each meal for some months. At the same time a reasonable amount of exercise should be taken out of doors, and a sponge bath, with friction, be employed daily. Care should be taken not to be often exposed to the hot sun.

Painters' Colic.— *Colica Pictonum.*

This form of colic is caused by the slow introduction of lead into the system, — generally the carbonate of lead. It passes under the different English names of painters' colic, Devonshire colic, and dry belly-ache. The first of these is the name by which it is most commonly known, from its frequent occurrence among painters, who use white lead (carbonate of lead) a great deal in the preparation of their colors.

Symptoms. — The disease generally comes on in a very gradual way. At first, the appetite is impaired, there is slight nausea, belching of wind, languor, very obstinate costiveness, transient pains, with a feeling of weight and tightness in the belly, and a disinclination to make any exertion.

By degrees, the pain in the bowels, and particularly about the navel, becomes more severe, and has a *twisting* character. The belly becomes hard, drawn in, and a little tender to pressure, and the stomach very irritable. The pain occasionally slacks off a little; but never, even in mild cases, entirely stops, as in other kinds of colic.

In some severe cases, the pain runs up to the chest, and down the arms; also down to the bladder, causing the urine to be passed with pain and difficulty, and giving a sense of weight and bearing down in the lower belly. During the severest pains, the countenance is pale, contracted, and full of suffering; cold sweats break out upon the face and limbs, and anxiety and agitation seize the patient.

When the disease is not seasonably removed, it degenerates into the chronic form, the mental and physical energies become torpid, the circulation in the small vessels inactive, the skin dry, harsh, shrivelled, pale, sallow, or of a leaden hue, the temper irritable, despondING and gloomy, and the body wasted. Beside all this, the muscles which lift up the lower arm become *palsied*, so that, when the arms are raised, the hands hang down in a helpless condition. In some cases, there is a blue line along the edges of the gums.

Treatment. — For relieving the pain and opening the bowels, the treatment should be very much the same as that for bilious colic. There is one article, however, which is thought to have some special influence in curing this disease, after it has become chronic; it is alum. Fifteen grains of alum, two of aloes, two of jalap, and four of Dover's powder, may be mixed, and taken for a dose two or three times a day. If the muscles of the arm be palsied, one sixteenth of a grain of strychnine may be added to the above. The aromatic sulphuric acid, taken as a drink, fifteen drops to the tumblerful of water, is always worthy of trial.

The use of the electromagnetic machine may be tried for the palsy; or a splint applied to the arm and hand, with vigorous friction applied once or twice a day, will sometimes do much for recovering the use of the muscles.

But the best remedy for the palsied muscles is iodide of potassium

(146), taken freely. The sulphuret of potassa, one ounce dissolved in a quart of water, and taken in teaspoonful doses, three times a day, is also worth a trial. The affected arm should be soaked an hour, once or twice a day, in the same amount of this latter salt, dissolved in a gallon of water.

Means of Prevention. — The numerous persons who work in lead, should comb their hair with a fine comb, wash their hands and face, and rinse their mouth several times a day, and also wash the whole person with soap once or twice a week, and with clear water, or saleratus and water, once a day. Their working clothes should be of a kind to admit of being washed once or twice a week, and they should be put off for others when out of the workshop. A paper cap should be worn while at work. The food of the workmen should not be exposed to the vapors or floating particles of lead, and consequently should not be carried into the shop; and when much of the poison is floating in the air of the work room, it is a good plan to wear a mask to prevent its being drawn with the breath into the throat and lungs.

It has been said that those who eat freely of fat meats, butter, and other oily substances, are not attacked by the disease, though exposed to the poison. I know not what protection this can give, unless the skin is in this way kept more oily, which prevents the absorption of the poison. This would seem to afford a hint in favor of anointing the whole person once or twice a week with sweet oil.

Costiveness.—Constipation.

Few disorders are more common than costiveness. By this term I mean a sluggish state of the bowels, which causes them to retain the feces longer than is warranted by health. In this complaint, the discharges from the bowels are not always less frequent than they should be, but they are less in quantity, are compacted and hard, and are passed by hard straining, and sometimes with considerable pain.

Symptoms. — Headache, dizziness, feverishness, bad feelings in the head not easily described, loss of appetite, sometimes nausea, but little desire to go to stool, a weight and heaviness about the lower part of the belly, and a sense of confinement over the whole body.

Causes. — Sedentary habits, particularly when connected with close application of the mind; astringent articles of medicine; stimulating diet, composed chiefly of animal food; various diseases, particularly those of a nervous character, and especially, a neglect to evacuate the bowels at proper periods. All these causes tend to weaken the bowels, and gradually to arrest that peculiar undulatory movement, or worm-like action, called the peristaltic motion of the bowels. It is this continual contraction of the muscular fibres of the intestines from above downward, which pushes the contents steadily along; and whatever weakens the force of this vernicular play of the intestinal walls, brings on constipation.

Treatment. — One of the first things to be done is to establish the

habit of *attempting* to evacuate the bowels at a particular hour every day. The best time for most persons is soon after breakfast in the morning. Whether successful or not, the attempt to procure an evacuation should on no account be omitted. This regularity will often do much to break up the costive habit.

Diet. — To this should be added a careful regulation of the diet. The quantity of food taken should be no greater than can be easily digested. Full meals which distend the stomach and cause it to press upon the bowels embarrass their movements. Bread made from fine wheat flour is an abomination in this disorder. Eat only that from unbolted flour. Cracked wheat, prepared as directed among dietetic preparations, is excellent for the cure of costiveness. Fresh vegetables, as peas, beans, potatoes, squashes, and ripe fruits, in their season, are all wholesome, and tend to relieve costiveness. But rich pies, puddings, cakes, doughnuts, and all that sort of trash, increase the disorder.

Water Injections, etc. — One of the best remedies is water, cold or tepid, according to the condition of the patient, injected into the bowels with the *domestic syringe*. The best syringes for this purpose are Mattson's, and Davidson's, one of which should be in every family. Water used externally, in the form of the sponge bath, is also useful.

Medicines. — All the above measures having failed to give relief, take Mettauer's aperient, or the neutralizing mixture. If these fail, podophyllin, etc. (36), may have a trial. A cold decoction of thoroughwort, drank daily, sometimes has an excellent effect. It must be remembered that medicines *may* make matters worse, and they should be used cautiously.

All the causes of the disease must of course be avoided.

Piles.—Hemorrhoids.

There are few complaints more common than the piles, and scarcely any which cause more trouble and misery. They consist in a fulness of blood, and languid circulation in the lower portion of the lower bowel or rectum. In consequence of this congestion, either the veins of the gut become enlarged or varicose, or the blood gets infiltrated into the cells beneath the mucous membrane, and collects so as to form bloody tumors.

These tumors, which are seldom absent, are the leading features of the piles. They sometimes appear externally, around the anus; this is *external piles*. At other times they are within the bowel; the complaint is then called *internal piles*. They are called *bleeding piles* when blood is discharged, and *blind piles* when it is not.

Symptoms. — Usually there is a sense of weight and weakness in the lower part of the back and loins, with a painful itching about the anus. On going to stool, there is a burning, cutting pain experienced, which is followed by bearing down and tenesmus. If it be bleeding

piles, the little tumors will bleed at every motion of the bowels. There are frequently disagreeable sensations in the head, general lassitude, an irritable state of mind, and a sense of fulness and anxiety in the stomach. The pains experienced range all the way from the slightest twinges up to the most terrible sufferings, which appear like tearing the body asunder.

Causes. — Everything that irritates the lower bowel, and causes a determination of blood to the part. All drastic physic has this effect, — particularly aloes, which acts especially upon the rectum. Habitual costiveness, straining at stools, riding much on horseback, sitting a great deal, tight lacing, high-seasoned food, and stimulation generally, lifting and carrying heavy weights, and indurations of the liver.

Females during pregnancy are much afflicted with piles, which are induced by the costiveness so peculiar to their condition, and by the pressure of the enlarged womb upon the veins of the pelvis.

Treatment. — This should be medicinal and dietetic.

Great care must be observed not to push medication too far. Active purging will do great mischief. Yet costiveness must in some way be corrected. For this purpose, no remedy that I have ever tried has done better in this complaint than an electuary composed of confection of senna, flowers of sulphur and cream of tartar (6), taken in doses just sufficient to procure one natural motion of the bowels each day. Pills made of extract of thoroughwort are said to do well. If the liver be in a congested state, take some of the articles recommended in the chronic inflammation of that organ.

For the local treatment, nothing is better than two ounces of lard and one dram of the flowers of sulphur mixed, and rubbed between two plates of lead until they are well blackened. This ointment is not only soothing, but curative, both in the bleeding and blind piles. An ointment of almost equal excellence may be made from one handful each of witch hazel bark, white oak bark, and sweet-appletree bark, boiled together in one pint of water down to one third of a pint. Then strain, and add two ounces of lard, and simmer away the water, — stirring continually before and after removing from the fire, till it cools.

If there is much inflammation and distress, an emolient and soothing poultice should be applied, composed of slippery elm bark and stramonium or poke leaves. Steaming the parts is sometimes useful, by sitting over a hot decoction of hops, stramonium, and poke.

Piles may often be cured by the use of the domestic syringe. Daily injections of cool or cold water will do much to strengthen the bowel, and restore the dilated veins to their natural condition.

The food should be of a laxative nature, corn bread, rye pudding, bread of unbolted wheat flour, mealy potatoes, ripe fruit, pudding and milk, buckwheat cakes, broths, and a little tender meat once a day.

Looseness of the Bowels.—*Diarrhœa.*

Looseness, or relax of the bowels, is manifested by frequent, copious, and thin, or unusually liquid discharges. The excessive discharge may be caused either by irritating and unwholesome food, by inflammation and ulceration of some portion of the bowels, or by debility.

Symptoms. — Rumbling noise in the bowels, with more or less weight and bearing down, and uneasiness in the lower part of the bowels. This pressing down and uneasiness are relieved as soon as the evacuation takes place, but returns when another is near at hand. Griping is generally present, the strength is reduced, and the skin is pale, dry, and, after a time, sallow.

Treatment. — When the complaint is caused by irritating food, it will generally stop as soon as the offending substance is removed, and not much medicine will be required.

To neutralize any acidity, to remove wind, allay irritation, and strengthen the stomach, the compound syrup of rheubarb and potassa is well adapted, given in tablespoonful doses, every hour, till it operates. A little paragoric added to it occasionally, or essence of peppermint, or spearmint, may aid its good effects.

If nausea and vomiting are present, put a mustard poultice upon the stomach, and give a few drops of laudanum. If there is much griping, give an injection (248), with twenty drops of laudanum in it. A common diarrhœa may generally be arrested at once by prescriptions 159 or 162, in teaspoonful doses, after each discharge.

When there is inflammation and ulceration of the bowel, the treatment must be similar to that for dysentery, — fomentations externally, and the occasional use of starch injections, mild cathartics (9) (10), and Dover's powder internally.

Chronic Diarrhœa.

The acute form of diarrhœa, not being properly managed, often runs on, and becomes chronic, and is at times exceedingly difficult to cure.

Symptoms. — Frequent discharges, generally with some pain and griping, restlessness, thirst, poor appetite, debility, loss of flesh, dry, rough, and somewhat sallow skin, and tongue dry and dark-colored. The food often passes through the bowels pretty much in the condition in which it was swallowed. The liver is generally out of order, and the bowels are frequently afflicted with a low grade of inflammation.

Treatment. — In this form if the disease, astringents and tonics will generally be required. Sometimes a teaspoonful of brandy, in a little sweetened water, or in clear water, several times a day, will effect a cure. Good cherry brandy is a valuable remedy; so is blackberry

brandy. Many of the worst cases have been cured by taking no nourishment, for a long time, except milk, with a little lime water in it.

When the liver is involved in the complaint, as evinced by light-colored stools, leptandrin, geranium, etc. (341), may be given with advantage.

In some instances, when there is considerable debility, pills of quinine, catechu, etc. (342), will do well.

A sponge bath must be taken daily, and the skin be well rubbed after it.

Cholera Morbus.

The above name is given to a disease common in warm weather, and characterized by sudden attacks of bilious vomiting and purging, with severe pain in the belly, cramps, and general fever and subsequent prostration. The great amount of bile secreted and discharged has given it the name *cholera*, from *choler*, bile.

Symptoms. — The disease begins by sickness and distress at the stomach, which is succeeded by violent gripings, with vomiting of thin, dirty-yellowish, whitish, or greenish fluid, with discharges from the bowels similar to that vomited. The nausea and distress, with some few exceptions, continue between the vomiting and purging, and the pain, at times, is intense. The pulse is rapid, soon becoming small and feeble, the tongue dry, the urine high-colored, and there is much thirst, though no drink can be retained on the stomach. It is to be distinguished from diarrhœa by the *bilious* discharges.

Treatment. — Apply a large mustard poultice over the stomach and liver, and give tablespoonful doses of compound powder of rhubarb and potassa, every half hour, until the vomiting and nausea are checked, adding to each dose five to ten drops of laudanum, if necessary. Perhaps it would generally be best, however, to give liberal draughts of warm water, at first, or flax-seed tea, that all the solid contents of the stomach and bowels may be washed out.

A teaspoonful of laudanum in a wineglassful of flax-seed tea, given as an injection, every two hours, will sometimes do excellently well; or a tea made of chamomile flowers, or colombo, and made sour by a few drops of nitric or sulphuric acid, and given internally, will sometimes succeed better than most other things. One grain of morphine and thirty grains of bicarbonate of soda dissolved in an ounce of sweet tincture of rhubarb, and given in teaspoonful doses, every half hour will often have a fine effect. The prescription 162 is also valuable.

Hot bricks should be applied to the feet, and warm flannels, or other kinds of dry heat, to the whole body.

Asiatic Cholera.

Beside the above name, this fearful disease has been called epidemic cholera, malignant cholera, spasmodic cholera, and cholera

asphyxia. It first attracted notice in Bengal, in 1817, whence it spread westward through Europe, and in June, 1832, it reached Quebec, on this continent.

Symptoms. — First Stage. — The first, premonitory stage, is marked by derangement of the digestive organs, rumbling in the bowels, pain in the loins or knees, twitchings of the calves of the legs, impaired appetite, thirst, and especially, a slight diarrhœa; and these symptoms continue from a few hours to several days. I should add to these symptoms what is said to have been recently discovered, namely, that for several days before the attack, *the pulse is down to forty or fifty beats in a minute*. This, if it prove to be reliable, is a very valuable symptom.

Second Stage. — This stage is marked by vomiting and purging a thin, colorless fluid, looking almost exactly like rice water; by severe cramps in the calves of the legs, which soon attack the bowels and stomach. These cramps are excessively painful, and draw the muscles into knots. The tongue is pale and moist; the pulse feeble, though sometimes full and firm; the breathing hurried, with distress about the heart; great thirst; a feeling of internal warmth; and the secretion of urine entirely stopped.

These thin, colorless discharges by vomiting and purging, are the serum or watery portion of the blood, which oozes through the sides of the blood-vessels, and runs off rapidly, leaving the crassamentum, or red, solid part of the blood, stranded upon the inner surfaces of the arteries and veins. When so much of this is discharged that the blood cannot circulate freely, the patient sinks into the

Third Stage, which is characterized by great prostration; pulse hardly perceptible; skin cold and clammy; face blue or purple, and eyes much sunken; hands dark-colored and sodden, looking like a washerwoman's; breathing short and laborious; a sense of great heat in the stomach; and intense thirst. Recoveries from this stage seldom take place.

Treatment. — In the first stage, the diarrhœa should receive the most prompt attention. From five to ten drops of laudanum, repeated a few times, every three hours, will generally put a stop to it. Morphine (162) is also a suitable remedy. The compound syrup of rhubarb and potassa, with some other articles (343), in tablespoonful doses, every hour, till it operates gently, is worth a trial. The diet should of course be very carefully regulated at such a time, though not particularly changed, except to leave off any indigestible article which is known to be injurious, and to be made a little more sparing than in a time of perfect health.

When the second stage has set in, or the stage of vomiting, purging, and cramps, the treatment must be energetic. The sinking powers must be sustained by chloroform, opium, and ammonia (119), or by camphor, opium, and cayenne (344), giving one pill every hour. Brandy may also be given freely.

The warmth of the surface must be promoted by all possible means, hot bricks and bottles, tincture of cayenne, friction, etc.

In the third stage, the remedies recommended above are to be pursued with increased energy, particularly the stimulants, and the efforts to promote the warmth of the surface.

Dysentery.—Bloody Flux.—*Colitis.*

This is an inflammation of the mucous membrane lining the lower or large bowels. The small bowels begin at the stomach, and are eight or ten yards long; being largest near the stomach, and diminishing in size as they approach their termination at the cæcum. The lower or large bowels are two or three times as large as the small ones, and from their junction with the latter, they extend about six feet to the outlet, or *anus*. The large bowels are composed of the cæcum, the colon, and the rectum. The rectum is about one foot in length.

In most cases of dysentery, the rectum, and about half the adjoining portion of the colon, experience the chief force of the inflammation. Sometimes the whole of the colon and cæcum are affected. Sometimes the mucous membrane lining these is ulcerated, and, becoming wholly disorganized, passes off in shreds.

Symptoms. — The disease comes on with loss of appetite, costiveness, lassitude, shivering, heat of skin, and quick pulse. These are followed by griping pain in the bowels, and a constant desire to pass their contents. In general the passages are small, composed of mucus mixed with blood. These passages are attended and followed by severe gripings and inclination to strain, learnedly called *tormina*, and *tenesmus*. They are sometimes, in the early stages, attended by nausea and vomiting. The natural feces, which do not pass off much, are small in quantity, and formed into round, compact balls, or irregular, hardened lumps. This tenesmus, or great desire to strain, will continue, perhaps increase, for several days, — the discharges being mostly blood in some cases, and chiefly mucus in others. Having, generally, but little odor, at first, these discharges become, as the disease advances, exceedingly offensive.

Causes. — Dysentery is very frequently caused by sudden changes from hot to cold, by which sweating is suddenly checked, and the blood repelled from the surface. Hot climates, and dry, hot weather are predisposing causes. All green, unripe, and unwholesome food; and all indigestible food of every sort, may induce it.

Treatment. — In mild cases, give a tablespoonful of castor oil and two teaspoonfuls of paragoric, mixed, once a day. Sometimes, in place of the above, a dose of rochelle powder, dissolved in water, with thirty or forty drops of laudanum, may be taken. A moderate quantity of flax-seed or slippery elm tea, may be taken as a drink, and the bowels be well emptied by an injection of starch.

When there is much pain in the bowels, a mustard poultice laid

upon them, will have a good effect. The starch injections should, in such case, have half a teaspoonful of laudanum mixed with it. The compound syrup of rhubarb and potassa will often act favorably, given in tablespoonful doses.

If there is reason to suppose the liver is affected, give podophyllin, etc. (46).

The patient should not be allowed to sit up, and must be kept very still, and be allowed only a very scanty diet, as flour porridge, well boiled, rice water, etc.

Chronic Dysentery.

When dysentery "runs on" for some time, it may become *chronic.*

Symptoms. — Looseness of bowels, — the discharges being unhealthy, more or less bloody, attended by bearing down, or a desire to strain, and being in number from two to forty a day. There is great debility, the pulse is weak and quick, the tongue slightly furred, the appetite lost, the face pale and sallow, and the skin dry and parched. Sometimes the relax alternates with costiveness.

Treatment. — In this form of the complaint, astringents will be necessary (159) (161) (162) (345) (346) (347).

Injections may be used, if necessary, composed of nitrate of silver, fifteen grains to the ounce of water, or an infusion of golden seal, with a little tincture of prickly-ash berries added to it.

The diet must be very light, easy of digestion, and nutritious. In some cases, it should be composed chiefly of wheat flour porridge, or boiled milk and boiled rice. In other cases, a little tender beef steak should be taken once a day.

Worms.—*Vermes.*

The intestinal canal is subject to various disturbances from the presence of worms. Of these troublesome tenants, there are three principal varieties.

The Ascaris, or *pin-worm,* called also maw or thread worm, is a small, white, thread-like worm from half an inch to an inch in length. These worms live, in great numbers, in the rectum, where they excite great irritation and itching.

The Lumbricus, or *ascaris lumbricoides,* is a round worm, about an eighth of an inch in thickness, and from an eighth to a quarter of a yard in length. Its color varies from a milky whiteness to a deep red. It generally occupies the small bowels.

The Tenia Solanum, or *tape-worm,* is a flat worm, with four suckers at the head, is from a few feet to some hundreds in length, and full of joints. It dwells in the small bowels, and feeds on the chyle as it comes along, before it is absorbed by the lacteals. In this way, it

robs the body of nourishment, and produces great loss of flesh, and an enormous appetite.

Symptoms. — In the grown person the symptoms of worms are quite obscure, except an intolerable itching within the anus, which generally indicates pin-worms.

In children worms are indicated by paleness, itching of the nose, grinding of the teeth and starting in sleep, irregular appetite, bad breath, swelled upper lip, picking of the nose, hard swelled belly, and one cheek constantly flushed.

Treatment. — For expelling worms various articles have been used. Among these spirits of turpentine (155) has a high reputation. The following preparation does well: Spirits of turpentine, half an ounce; essence of anise, half an ounce; castor oil, one ounce; worm-seed oil, one ounce. Mix. The dose for a child one or two years old, is ten to twenty drops, every two or three hours. In two or three days, a brisk physic should be given. The worm powder is quite successful.

One of the most popular remedies is the pink-root. It should be united with a purgative. The following is a good preparation: Pink-root and senna, each half an ounce; bitartrate of potassa, one dram; pulverized jalap, half a dram; cardamom seeds, half a dram; extract of liquorice, two drams. Mix, and add half a pint of boiling water. Let the whole steep an hour. Give a tablespoonful or two, occasionally, till the worms are expelled.

An injection composed of quassia (66), or aloes (22), or of simple sweet oil, is very effectual in removing pin-worms from the lower bowel. So is an injection composed of the red iodide of mercury, one grain; iodide of potassium, half a grain; and two pints of water.

Most of the above preparations are thought to be successful in expelling all kinds of worms; but for the *tape-worm*, no other remedy has yet shown itself as effectual as *pumpkin-seeds*. The seeds should be well bruised, and steeped in water. This should be drank freely for several days, if need be. It is believed to be a sure remedy, even in cases of several years' standing.

In all cases of worms, the diet should be carefully chosen, and be connected with proper exercise, pure air, frequent bathing, and all those measures which tend to improve the general health.

After the expulsion of the worms, tonics should always be taken to strengthen the bowels, that the same evil may not return.

Acute Inflammation of the Kidneys.—*Nephritis.*

Before speaking of this disease, I wish to give the reader a general idea of a kidney, and shall do so by the use of two cuts.

Fig. 108 presents the external surface of the right kidney, with its renal capsule mounted on top; *i*, being its upper edge; *f*, *h*, superior and inferior branches of the emulgent artery; *c*, *d*, *e*, three branches of the emulgent vein; *a*, the pelvis of the ureter; *b*, the ureter.

Fig. 109 is the same kidney laid open; 1, being the supra renal capsule; 2, the vascular portion; 3, 3, the tuberlar portion, consisting of cones; 4, 4, two of the calices receiving the apex of their corresponding cones; 5, 5, 5, the three infundibula; 6, the pelvis; and 7, the ureter.

Fig. 108.

Fig. 109.

The kidneys are glands, and their office is to draw or strain off from the body those effete or worn-out particles, or *products of decay which contain nitrogen*, while the *liver* takes away those *carbonaceous matters which have no nitrogen.* These useless substances which go out through the kidneys are generally in the form of urea. In carrying off these matters, the kidneys may have more to do than properly belongs to them; and may be so stimulated, or irritated, or injured in some way, as to become inflamed.

Symptoms. — Like most other inflammatory diseases, it begins with cold chills and rigors, especially in the back and loins, followed by fever and pain. The pain frequently extends to the bladder, the loins, and the thighs, and is of a severe, lancinating kind, — though sometimes obtuse. Pressure, motion, straining, or taking a full breath, add to its pungency. The urine is scanty, high-colored, sometimes bloody, and can only be passed drop by drop. In the loins there is a sense of heat, gnawing, and constriction; the bowels are either constipated, or relaxed by diarrhœa. A numbness of the thigh, and drawing up of the testicle on the affected side, are marked and peculiar symptoms. In some cases, there are nausea, vomiting, oppression at the stomach, faintness, hiccough, drum-head distention, and rumbling of the bowels. The skin is hot and dry, the pulse hard and frequent.

Causes. — The use of cantharides, oil of turpentine, and other diuretics, taking cold, violent exercise, mechanical injuries, the translation of rheumatism or gout, the striking in of skin eruptions, and gravelly formations in the kidneys or ureters.

Distinctions. — This disease is to be distinguished from *colic* by the pain being increased by pressure, and by the frequent but difficult discharge of red urine; from *lumbago*, from its being confined frequently to one side, and also by the urinary troubles, and by the nausea and vomiting; and from all other diseases, by the numbness of the thigh, and the drawing up of the testicles.

Terminations of the Disease. — It runs a rapid course, and may terminate by resolution, or by suppuration. When the latter happens, it is indicated by the decline of the more violent symptoms, a throbbing and a sense of weight, with chills, followed by flushes of heat, and sweating. The matter formed, generally small in quantity, may pass into the cavity of the kidney, and thence through the bladder to a natural outlet with the urine.

Treatment. — Either put the feet into a hot mustard bath, or put mustard drafts upon them. At the same time apply a large mustard poultice upon the small of the back, and follow it up with hot fomentations of stramonium leaves and hops, or stramonium and wormwood or tansy.

Let perspiration be induced as soon as possible by five to ten ten drop doses of tincture of veratrum viride, repeated every hour, or by teaspoonful doses of the compound tincture of Virginia snake-root, given every half hour.

If costiveness exist, the bowels must be opened by epsom salts, cream of tartar, or salts of tartar; or by copious injections of warm water, containing a few drops of the tincture of arnica leaves. Such injections not only unload the bowels, but act as a local bath, by lying in the bowel near the inflamed kidneys.

The drinks must be mucilaginous and diuretic. The marshmallow root and peach leaves, slippery-elm bark, flax-seed, mullein, elder blows, haircap-moss, and cleavers, are all valuable. If the disease is caused by gravel, twenty drops of liquor potassæ, largely dilated with flax-seed and upland-cranberry tea, and taken freely as a drink, is excellent.

Chronic Inflammation of the Kidneys.

This is frequently the result of the acute form of the disease, but is also produced by injuries, and other causes.

Symptoms. — A weakness in the small of the back, and a dull, heavy pain in the kidneys. The urine is passed often, and in small quantities. It is alkaline, — sometimes white and milky, — and has in it deposits of phosphate of lime, and triple phosphates.

Treatment. — Infusions of pipsissewa, uva ursi, trailing arbutus, wild carrot, queen of the meadow, buchu leaves, or foxglove are useful diuretics, and may be taken with advantage.

The bowels must be kept open with some gentle physic (18), if they are costive; and the alkaline sponge bath, with friction, be used daily.

An eruption may be brought out upon the small of the back by rubbing on a few drops of croton oil; or, if the patient prefer it, a mustard poultice may be applied two or three times a week.

The food should be nutritious, and easily digested, and a little exercise be taken daily in the open air.

Acute Inflammation of the Bladder.—*Cystitis.*

This disease affects the lining membrane of the bladder, — sometimes its muscular substance. It may attack the upper portion, the middle, or the neck of this organ. It runs a rapid course.

Symptoms. — Burning, piercing, and throbbing pain in the region of the bladder. The pain extends to the perineum, and in some cases, to the testicles and thighs, and is much increased by pressure. The perineum, the space between the fundament and testicles, feels sore to the touch. The desire to pass urine is incessant, but the effort to do so is mainly ineffectual. The water passes off drop by drop, with great pain, or is entirely stopped, — causing enlargement of the bladder, and great distress. Mucus from the inflamed lining of the bladder passes off with the water. Nausea, vomiting, and great anxiety are common. The bowels are bound, and when the disease is on the side next the lower bowel, there is a desire to empty the bowels; and if the inflammation be in the neck, there is great pain in the perineum, and frequently an entire retention of the water. The pulse is full, hard, and frequent, the skin hot and dry, the thirst urgent, and the patient restless and dejected.

Causes. — This disease may be produced by taking cantharides and turpentine; by irritating substances forced into the bladder with a syringe, or by pushing bougies or catheters into it; by gravel stones in the bladder; by retained urine; by external injuries; by gonorrhœa; and by cold applied to the feet, or to the lower portion of the abdomen.

Treatment. — If the urine be retained, it is of the utmost importance that it be early drawn off with the catheter, lest a distention of the bladder bring on mortification. Great care is required not to produce irritation by any roughness in introducing the instrument.

Leeches should be applied upon the lower part of the bowels, the perineum, and around the anus. When these are removed, warm poultices should be applied. Cold compresses will often do as well. The bowels must be opened with epsom salts. Injections of warm water, with a few drops of tincture of arnica leaves, will act finely as a local bath, — the water being retained as long as possible.

The tincture of veratrum viride will be required in five to ten-drop doses, or the compound tincture of Virginia snake-root, to induce perspiration. Dover's powders may sometimes be used for the same purpose.

Drinks must be taken very sparingly. A small amount of cold infusion of slippery elm bark, or marshmallow and peach leaves, or

cleavers. This mucilaginous drink must be the beginning and the end of the diet during the active stage of the disease.

Chronic Inflammation of the Bladder.—*Cystirrhœa.*

This is much more common than the active form of the disease. It often arises from the same causes which produce acute inflammation of the bladder.

It often passes under the title of "catarrh of the bladder." It is a chronic inflammation of the mucous lining of the bladder, and is a very common and troublesome affection among old people.

Symptoms. — Slight lancinating pains, with a feeling of heat in the region of the bladder, and a sense of weight and tenderness in the perineum; frequent and tormenting desire to pass water, with occasional spasmodic action of the bladder. The urine is loaded with tenacious mucous, just as the expectoration has large quantities of mucus in it when there is inflammation of the membrane lining the windpipe and bronchial tubes. When the water has stood a while, this mucus settles at the bottom of the vessel, leaving the fluid clear above. Great quantities of this are sometimes passed, — amounting even to pints in a day. The triple phosphates of magnesia and ammonia are often found in the water.

Frequently there are derangements of the appetite and digestive functions, a white or brown fur upon the tongue, a harsh, dry skin, with thirst and general debility, — especially in the back and loins. Sometimes there is a little fever.

Treatment. — To reduce the inflammation, apply leeches, or mustard, or croton oil, or a cold compress every night.

As a diuretic, give an infusion of buchu, uva ursi, trailing arbutus, queen of the meadow, etc. Tincture of veratrum viride and sweet spirits of nitre (125) is a good remedy. The compound infusion of trailing arbutus is well recommended. So is the compound balsam of sulphur. An infusion of the pods of beans has been well spoken of.

An injection into the bladder, once a day, of a tepid infusion of golden seal root, with much care, may be of great service; or an infusion of equal parts of golden seal, witch hazel, and stramonium. It may be done with a gum-elastic catheter, and a small syringe.

The bowels must be kept open with the neutralizing mixture, or some other mild physic; and the skin bathed with saleratus and water once a day, and rubbed well with a coarse towel.

Should there be any scrofulous, or gouty, or rheumatic condition of the system, the remedies for those complaints may be used in addition to the above.

Disease of the Supra-Renal Capsules.

The supra-renal capsules are small bodies situated above the kidneys. (Fig. 109, 1.) Their office is not well understood. It has

been found of late that they are subject to a disorder, having peculiar symptoms. This is a new disease.

Symptoms. — The most marked symptom is a peculiar change in the color of the skin, called "bronzing." This bronzing process begins in patches on those parts exposed to the sun, and to friction, as the neck, the backs of the hands, the fronts of the thighs, and the arms. These patches look, in color, like spots upon a bronze statue, deprived of their gloss.

Another marked symptom is a peculiar *debility*, which comes on without any apparent cause, — there being, generally, no evidence of organic disease, and no loss of flesh, — and is attended with faintings, loss of energy both of body and mind, a peculiar flabbiness of flesh, and an early death, apparently from sheer weakness.

The blood becomes early depraved, and loses its coloring matter, as shown by the paleness of the skin where there is no bronzing.

The pulse is generally very soft and compressible. The stomach is irritable, the appetite gone; there is nausea, and sometimes vomiting, with pain and a sense of sinking at the pit of the stomach. Frequently there is costiveness, sometimes diarrhœa, and pains in the back and loins. In some cases there are epileptic fits, failure of memory, change of temper, or a numbness of the fingers, legs, etc.

Treatment. — The disease is a peculiarly fatal one. As no mode of treatment has yet proved successful, it is well to observe caution in prescribing.

The treatment prescribed for chronic inflammation of the kidneys, would perhaps be as safe as any that could at present be proposed.

Bright's Disease of the Kidneys. — *Albuminuria.*

This peculiar disease was first explained to the profession in 1837, by Dr. Bright, of England, whose name it took. It consists of a disorder of the kidneys, — probably a congestion and an obstructed circulation in them, from which arise two most important effects; first, albumen, an essential alimentary constituent of the blood, is secreted and passed off, in larger or smaller quantities, in the urine; and secondly, urea, the worn-out matters in the blood which the kidneys are made expressly to carry off, is permitted to remain. If the urine of a person having Bright's disease be examined, therefore, albumen, which should *not* be there, will be found, and urea, a natural constituent, will be absent.

Method of Examination. — To discover albumen in urine suspected to contain it, place a little in a test tube, and boil it over a spirit lamp. If albumen be present only in minute quantity, it may cause only a delicate opalescence; if in larger quantity, it may separate in curdy flakes, and fall to the bottom as a more or less abundant white precipitate. If *very abundant*, the liquid may become nearly solid.

The albumen is the same as the white of an egg, and the boiling has the same effect in whitening and hardening it, as upon that substance.

Albumen is sometimes found in the urine in a coagulated state, and having the shape of tubes or worms. (Fig. 110.) This is quite common in Bright's disease. The deposit seems to be made up of fibrous casts of the uriniferous tubes of the kidneys.

Fig. 110.

Symptoms. — The two unnatural conditions mentioned above, give rise to the symptoms of Bright's disease. One of them, however, is itself the most constant and characteristic symptom of the disease, namely, the presence of albumen. This, too, being one of the nutritive construents of the blood, its abstraction thins the serous portion of the blood, and causes it to filter out of its vessels into the cells, — causing dropsy of the cells, usually called cellular dropsy, or anasarca. This general dropsy begins frequently in the face, and spreads rapidly over the whole body and limbs. In addition to this, there are pains in the back and loins, a gradual failing of strength, and a derangement of digestion. The skin becomes dry, with a pale and bloodless appearance, and there are frequently thirst, nausea, and vomiting. The urine frequently has fat, blood, epithelial scales, mucus, blood discs, fibrous casts of the uriniferous tubes, and saline sediments; and is generally lighter by weight than in health, and less in quantity, and is apt to be red, brown, or dingy in color.

The retention of urea in the blood acts as a poison, and causes, toward the latter end of the disease, when accumulated in large quantity, drowsiness, convulsions, and apoplexy.

A frequent desire to make water, with a shifting back and forth of the bowels between costiveness and diarrhœa, are common symptoms.

Treatment. — The results of treatment in this disease are often unsatisfactory. Yet if taken in season, investigated with proper care, and treated with due diligence, much may be done for its cure. It is one of those harassing complaints, which physicians in family practice seldom have the patience to investigate and manage with sufficient care.

Let the healthy and active condition of all the vessels of the skin be the first object aimed at. This will relieve the laboring and faltering kidneys of a portion of their burden. The alkaline sponge bath with vigorous friction every day, will secure this object.

In the next place, the skin being put in a working condition, should be made to work by some internal diaphoretic, — as the tincture of veratrum viride, in doses of from five to ten drops, or the compound tincture of Virginia snake-root, in teaspoonful doses.

The kidney may be still further relieved, especially when there is considerable tenderness, and other signs of inflammation, by cupping, leeching, mustard poultices, and croton oil.

The bowels should be regulated by some gentle physic, as cream of tartar dissolved in flax-seed tea, or rochelle powders, or epsom salts, the lenitive electuary, or the white liquid physic. In some cases,

podophyllin and leptandrin (40), or the compound powder of jalap (41), are useful.

When there is dropsy of the cells, elaterium may be used as physic (31), or the kidney may be jogged by digitalis (130) (129), its effects being carefully watched. Cider, freely drank, has been found useful in some cases.

To restore the blood, iron (73) (93) (74) (75) (72) (71) is the essential article. When there is considerable debility, some of the vegetable bitters, as quinine, quassia, gentian, colombo, etc., may be used daily.

Coffee, and all indigestible articles of food, as rich pastries, new bread, high-seasoned meat, and fats must be avoided, — in a word, nothing must be taken, either in kind or quantity, which the stomach cannot easily digest.

Diabetes.

This disease is a kind diarrhœa of the kidneys. The amount of urine secreted and discharged is large, sometimes enormous in quantity, — amounting even to several gallons in twenty-four hours. Everything taken into the stomach seems to run off by the kidneys. The food and drink being mostly converted into urine, do but little good. The kidneys having got into an exalted state of action, *do too much*, — just as the mucous membrane of the air tubes does in bronchitis.

Nature of the Urine. — Not only is there too much urine discharged, but, instead of being lighter than healthy urine, as in Bright's disease, it is heavier, and instead of holding albumen in solution, it contains *grape sugar*.

To Detect Sugar. — Put a little of the suspected urine in a test tube, — add to it a drop or two of solution of sulphate of copper, which will give the fluid a pale blue tint. Now add liquor potassa in excess; if sugar be present, this will throw down a pale blue precipitate (hydrated oxide of copper), which will immediately re-dissolve, forming a purplish blue liquid. Boil this over a lamp; if there be sugar, a reddish or yellowish-brown precipitate (sub-oxide of copper) will be thrown down; if no sugar, a black precipitate (common oxide of copper) will fall to the bottom.

Another Test. — Place a little urine in a test tube; add to it half its volume of liquor potassa, and boil five minutes. If there be sugar present, the liquid will take a brownish or bistre tint.

Growth of Torula as a Test. — Place a portion of sacharine urine in a warm place, and a scum will soon rise, as if a little flour had been dusted on it. This, when examined under the microscope, proves to be minute oval bodies. These expand and dilate the vesicle containing them, into the form of a tube. They still continue to enlarge, and project from the parent bladder, like buds. The whole

then resembles a jointed fungoid growth (Fig. 111), which finally breaks up, and falls to the bottom, as a copious deposit of oval vesicles or spores.

Fig. 111.

Other Symptoms. — Great thirst, craving appetite, dry skin, a sense of weight and uneasiness in the stomach after eating, dry and parched mouth, white and foul or clean and red tongue, wasting of flesh, languor and aversion to exercise, debility, pain and weakness in the loins, costiveness, loss of the sexual feeling, and cold feet. As the disease draws towards a fatal end, the gums become spongy, the breath fetid, sometimes smelling like urine.

Treatment. — The skin should have about the same treatment as that recommended in Bright's disease. Also, the same counter-irritation over the kidneys. The bowels must be kept open by some gentle physic (13) (12) (15).

Tonics. — These will be required to restore the tone of the system, particularly iron, — same preparations as recommended in Bright's disease.

Astringents to check the flow of urine will be needed. Alum, in three-grain doses, three times a day, or sugar of lead, or white vitriol, or clear opium, will be serviceable. Creosote, in one or two-drop doses, and tincture of cantharides, have each cured cases.

One scruple of Peruvian bark, one scruple of wild cranberry leaves, powdered, and half a grain of opium, mixed and taken three times a day, is a good remedy.

All articles which contain sugar and starch must be forbidden in the diet. Bread and potatoes contain a large amount of starch; and beets, parsnips, and some other vegetables, have sugar. It is best to confine the patient almost entirely to tender, fresh meats; and the drink, notwithstanding the great thirst, must be restricted to a *very small quantity.*

Bleeding from the Kidneys, etc.—*Hæmaturia.*

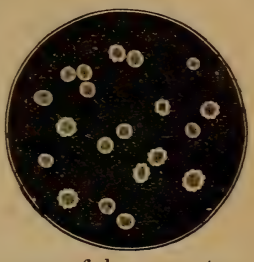
By this I mean a discharge of blood from the urinary passage. It may come from the kidneys, the ureters, the bladder, or the urethra.

Symptoms. — The passage of the blood is preceded by pain in the region of the bladder or kidneys, and accompanied by faintness. There is generally heat and distress in the loins, and tenderness upon pressure in the region of the bladder or kidneys, according to the place from which the blood comes.

It is sometimes difficult to decide whether the coloring matter in the urine is really blood. In such cases, the microscope will generally detect the blood corpuscles, if present. They commonly appear as in Fig. 112, — having a yellow color, and pretty uniform size.

Treatment. — This must of course vary according to the nature of the case, and the immediate cause producing it. Where active bleeding exists, the patient must have absolute rest in bed, with applications of cold to the hips and loins. If the patient be strong and full of blood, wet cups or leeches may be applied over the kidneys, or the bladder. In such cases, too, the bowels must be freely moved with some preparation of salts (14) (18) (20) (25).

FIG. 112.



Sugar of lead is a valuable remedy; but it should be given in large doses for a short time, rather than in small doses for a long time. It is best taken in form of solution (348), two great spoonfuls every two hours, until five or six doses are taken.

But the best remedy is *gallic acid.* It seems to have extraordinary power in this complaint. It should be given in five-grain doses, mixed with a teaspoonful of mucilage of gum arabic, and ten drops of tincture of henbane.

Suppression of Urine.—*Ischuria Renalis.*

THIS disease is, in one respect, just the opposite of diabetes. While immense quantities of urine are secreted in that, none is secreted in this. In that, the kidneys do too much; in this, they do nothing.

This complaint is sometimes called paralysis of the kidneys. It usually occurs in old persons, and those inclined to corpulency.

Symptoms. — The patient makes no water; and if the catheter be applied, none will be found in the bladder. The patient feels unwell, restless, anxious, with a slight pain in the loins and bowels, perhaps; but on the whole not illness enough to give any very good account of it. After a little time, nausea comes on, and perhaps vomiting, and soon drowsiness, wanderings of mind, incoherent talk, hiccough, stupefaction, and death. These head symptoms are caused by the shutting up, in the kidneys, the natural outlet of urea, of an excrementitious matter, which acts as a poison to the nervous system. Before death, the perspiration has a strong smell of urine.

Treatment. — The cause of this complaint not being known, the treatment must necessarily be a little uncertain. We cannot go amiss, however, in placing the patient immediately in a warm bath for fifteen or twenty minutes. Then apply wet cups over the kidneys, and follow these either by mustard poultices, or by hot fomentations.

Let the bowels be opened by the compound powder of jalap, or by elaterium (31). Epsom salts or cream of tartar might in some cases be substituted for the above. A stimulating injection is also desirable (246).

Diuretics, as sweet spirits of nitre, digitalis, queen of the meadow and peach leaves, equal parts, and marshmallow, are of course called for.

Much of the poisonous matter retained may be got out through the skin, by a free use of the compound tincture of Virginia snake-root or tincture of veratrum viride in full doses.

Although the symptoms, in the earlier stages of this complaint, may not attract much attention, or be thought worthy of notice, yet the treatment should be prompt and energetic, as a fatal termination is sometimes reached in the brief space of forty-eight hours.

Retention of Urine.

This disorder is often confounded with suppression of the urine, but it is different in every respect. In *suppression*, the urine is not formed by the kidneys; in *retention*, it is formed, and, in some cases, poured into the bladder, but is *retained* on account of some inability to pass it.

Ischuria. — This is one of the forms of retention. In this complaint, the urine has passed from the kidneys to the bladder, but from some cause, generally palsy of the muscles of the bladder, it cannot be passed off. In this case, there is no pain, but the stream of water flows off with slower and slower pace, — the patient having to stand a long time, and make tiresome efforts with the abdominal muscles to get the bladder emptied. As the quantity discharged diminishes, the desire to urinate grows more urgent. Pressure just above the pubes, gives pain, and the bladder feels under the hand like a large hard tumor.

Dysuria. — In this form of the complaint, the water is passed to some extent, but with pain and heat along the water-pipe. This is generally caused by some inflammation along the urethra.

Strangury. In this, the water is only passed, drop by drop, and with great burning, scalding, and tenesmus in the neck of the bladder. When there is considerable inflammation, the skin becomes hot, the pulse hard and quick, and the tongue covered with a white fur.

Causes. — These several forms of the complaint are caused by palsy of the bladder, gonorrhœa, inflammation in the neck of the bladder or the water-pipe, mechanical injuries of the bladder in child-bearing, or otherwise, by tumors pressing upon it, by irritation from gravel or stone within its cavity, by stricture or partial closing up of the urethra, by disease of the prostate gland, by taking spirits of turpentine or cantharides, or by the absorption of this latter article when used as a blister.

Treatment. — It is obviously necessary in this complaint, that treatment, in order to be of any avail, should be prompt; for when the retention is complete, the bladder will burst in from two to five days, and cause the death of the patient.

The treatment must vary according to the cause of the retention.

If it be caused by palsy of the bladder, the common flexible catheter must be used daily until the muscular fibres recover their lost

power. When much irritation is caused by introducing it, it is better not to withdraw it, but to close its external orifice with a small plug, which the patient can remove as often as necessary to let off the urine. To remove the paralysis, the electro-magnetic machine is worth a trial, — the current being passed through the bladder. At the same time let the patient take strychnia (85) (86) (83) (95). Cantharides, in the form of tincture, or in connection with strychnia (291), is often useful.

If the retention be caused by inflammation of the neck of the bladder, leeches should be applied to the perineum, and three or four drops of croton oil may be rubbed on just above the pubes to bring out an eruption. Warm fomentations will also be serviceable, and warm hip baths. Cooling diuretics, as infusions of marshmallow, cleavers, pumpkin seeds, buchu, sweet spirits of nitre, etc., must not be omitted.

Inability to Hold the Urine. — *Enuresis.*

This complaint, generally called incontinence of urine, is quite common among children. In some cases the child has no ability to hold its water at any time; but generally it is only passed off involuntarily at night while in bed. In adult life it is less frequently met with, except among the old.

Causes. — Irritation of the roots of the spinal nerves which go to the bladder, mechanical injuries of the bladder, palsy of the bladder, particularly in old people, debility of the neck of the bladder, a general weakness of the nervous system, worms in the bowels, piles, whites, gravel or stones in the bladder, etc.

Treatment. — As a general rule, the change of constitution which occurs at purberty cures this complaint. But as this does not always happen, it is important that parents do everything in their power to break it up early, lest it become an affliction for life.

Children who suffer from this disorder are apt to drink largely. This habit should be restrained. But little drink should be allowed, whatever the desire for it. Care should be taken that the child make water before going to bed, — also that it be roused at a late hour for the same purpose.

The skin should be washed all over, every day, with cool or cold water, and vigorously rubbed with a coarse towel. This will cause the excess of fluids to pass off through the skin, and lessen the action of the kidneys.

In some instances children urinate in bed through carelessness, — being half conscious of what is occurring, but not caring enough to rouse themselves. In such cases, they are often cured by some decided correction, — the impending act of passing water, connecting itself in their minds with the correction, and recalling them instantly to full consciousness. Of course this mode of relief should be resorted to with great judgment and caution.

When the complaint proceeds from debility or relaxation of the neck of the bladder, the compound infusion of trailing arbutus, and

the isinglass custard found among dietetic preparations, may be used freely. The tincture of cantharides, from ten to forty drops to children, may be given, and increased gradually to a hundred, or until slight difficulty is felt in passing the water. Then stop, and give the articles mentioned above. Spirits of turpentine is useful to some extent, given also in small doses, and continued for some time.

If the disorder be caused by irritation of the spinal nerves, cold water douched upon the back, or croton oil rubbed along the spine, or a warm stimulating or irritating plaster upon the lower part of the back, will be required. The electro-magnetic machine may do well in some cases.

Urinary Deposits.—Gravel.—Stone.

Unnatural deposits in urine are to be regarded simply as evidences of changes which disease is making in the body. As such they are valuable,—more valuable, in many cases, than any or all other symptoms we can study, and most valuable from the ease with which they may be investigated. Yet, but very few physicians, comparatively, pay any special attention to them, or make any effort to acquire the small amount of knowledge needed for their detection.

Sources of the Urine.— The urinary secretion has three sources. The largest bulk of it comes from the superabundance of drink taken into the stomach. This is shown from the free flow of pale urine after taking copious drafts of water or other fluids. Such quantities of water as are often drank, would embarrass the functions of animal life, were it not pumped off by the kidneys.

A second source of supply for the urinary secretion, is to be found in the elements of imperfectly digested food, and also some abnormal elements arising from incomplete assimilation. Oxalic acid is a specimen of the latter, being sometimes largely excreted, in dyspepsia, soon after a meal.

The third source of urine is found in those old and worn-out atoms of the system, which can serve no further useful purpose in the animal economy, and which cannot be got rid of by the lungs or skin. It is only, however, one portion of the dead tissue, namely, that which is rich in nitrogen, which goes out through the renal strainer,—another portion, which has a preponderance of inflammable elements, carbon, hydrogen, and perhaps sulphur, takes the outward channel through the liver, as bile.

Characteristics of Urine.—Healthy urine has a light amber color, is transparent, and has different degrees of density,—its specific gravity varying from 1.003 to 1.030. It has an aromatic, violet-like smell, and a bitter, disagreeable taste, like salts.

That which is passed a little time after drinking largely, is pale, and has a low specific gravity, varying from 1.003 to 1.009, and is called *urina potus*. That passed soon after the digestion of a full meal, is called *urina chyli*, or *urina cibi;* it has a specific gravity from 1.020 to 1.030. That which is secreted *from the blood*, and is passed

before eating or drinking in the morning, is called *urina sanguinis;* and has a specific gravity from 1.015 to 1.025. This is the best specimen of the average density and nature of healthy urine.

Healthy urine contains urea, uric acid, sulphuric acid, phosphoric acid, lime, magnesia, phosphate of soda, etc. It is only when these are discovered in *excess*, that they indicate disease.

Examination of Urine. — Let a piece of blue litmus paper be first dipped in the urine; if it be acid, the color of the paper will be changed to *red*, or reddish-brown. Should the blue color remain unchanged, then use yellow tumeric or reddened litmus paper; if the urine is alkaline, the tumeric will become brown, and the reddened litmus will be changed to blue. If the color in both cases remains unaltered, the urine is neutral; that is, neither acid nor alkaline.

This being done, let the specific gravity be taken. This is easily done by the urinometer (Fig. 113). This instrument is known also by the names hydrometer, and gravimeter. It is generally made of glass. When placed in distilled water, it will sink to a certain point; and as all bodies immersed in fluid displace a bulk equal to themselves, it follows that in a fluid denser than water, the instrument will not sink so deep. The space above the large bulb is marked off into degrees corresponding to different densities. When this instrument is immersed in urine, and has come to rest, the number on the graduated scale, which stands at the surface of the liquid, when added to 1000, will represent the specific gravity of the fluid. If, for example, the surface of the liquid corresponds with 9 on the scale, the specific gravity of the urine will be 1.009; if at 25, it will be 1.025.

FIG. 113.

By attending to the specific gravity of the urine, the physician may often gain important information respecting his patient, as it may be made to show him how much solid matter is daily carried out of the body through the kidneys. This, at the bed-side, may often give useful hints in regard to treatment.

The following table, constructed by Dr. Golding Bird, shows at a glance the amount of solid matter in 1000 grains of urine of different densities:

Specific Gravity.	Solids.	Water.	Specific Gravity.	Solids.	Water.	Specific Gravity.	Solids	Water.	Specific Gravity.	Solids.	Water.
1001	2.33	997.67	1011	25.63	974.37	1021	48.93	951.07	1031	72.23	927.77
1002	4.66	995.34	1012	27.96	972.04	1022	51.26	948.74	1032	74.56	925.44
1003	6.99	993.01	1013	30.29	969.71	1023	53.59	946.41	1033	76.89	923.11
1004	9.32	990.68	1014	32.62	967.38	1024	55.92	944.18	1034	79.22	920.78
1005	11.65	988.35	1015	34.95	965.05	1025	58.25	941.75	1035	81.55	918.45
1006	13.98	986.02	1016	37.23	962.72	1026	60.50	939.42	1036	83.88	916.12
1007	16.31	983.69	1017	39.61	960.39	1027	62.91	937.09	1037	86.21	913.79
1008	18.64	981.36	1018	41.94	958.06	1028	65.24	934.76	1038	88.54	911.46
1009	20.97	979.03	1019	44.27	955.73	1029	67.57	932.43	1039	93.87	909.13
1010	23.30	976.70	1020	46.60	953.40	1030	69.90	930.10	1040	93 20	906.80

The mode of using the above table is this. Having learned the density of the urine passed in twenty-four hours by means of the

urinometer (Fig. 113), a glance at the table will show the proportion of solid matter and water in 1000 grains of the urine. Then, by weighing the whole quantity of urine passed in twenty-four hours, the weight of solids drained off by the kidneys, may be determined by the simple rule of proportion.

Symptoms of Gravel. — A sudden attack of pain in the region of the kidneys, so acute and severe, frequently, as to cause fainting, and even convulsions. The pain runs down to the groin and thigh, causing a numbness on the affected side, and a drawing up of the testicle. The pain is excessive at times, and then remits. Finally it stops suddenly.

Leading from the kidneys to the bladder are two small tubes about the size of a goose-quill, called ureters, — being the appointed channels of the urine. The pain, of which I have spoken, is caused, generally, by the passage of a stone along one of these small tubes. If the stone happen to be a little too large for the tube, or uneven or ragged upon its surface so as to bruise and tear the delicate lining of the ureter, severe pain is the result. The pain is intense when the stone moves along; remits when it stops; and suddenly ceases altogether, when it gets through, and drops into the bladder.

Sometimes there is no pain, the gravel being so fine as to pass through the ureters very easily. It then passes through the urethra also, and is found as a sediment of the urine at the bottom of the vessel.

These urinary deposits are various, and quite unlike each other in kind. They indicate different states of health, and require to be spoken of separately.

Uric-Acid Gravel.

This form of deposit passes indifferently under the name of *uric* acid gravel, or *lithic* acid gravel. The person who is in the habit of passing this kind of deposit largely, is said to have the lithic or uric acid diathesis or condition.

Fig. 114.

Fig. 115.

The urine of persons in this state lets fall after it has stood awhile, a reddish sediment, like brickdust. This consists chiefly of urate of ammonia (Fig. 114 and 115), tinged with certain coloring matters.

This coloring substance may be more or less abundant, and give to the deposit various shades, as dirty-white, yellow, pink, and red. The pure uric acid sometimes appears as fine sand, or large crystals (Fig. 116). The urine is of a dark copper color, about like brown sherry, and is more scanty than in health. It is also highly acid, giving to litmus paper a deeper shade of red.

Fig. 116.

Persons who pass this kind of gravel largely, are apt to be troubled with inflammatory complaints; with acidity of stomach and heartburn; and some of them with gout and rheumatism.

Placed under a blowpipe, uric acid is decomposed, and gives out an odor like that of burnt feathers, combined with the oil of bitter almonds. It is dissolved by liquor potassa, from which muriatic and nitric acids precipitate it; and by sulphuric acid, from which it is precipitated by water. Acetic, nitric, and muriatic acids, alcohol, ether, and water, do not dissolve it.

Causes. — Uric acid is the form in which nitrogen and the effete compounds which contain it are got out of the body. It is the result of the decomposition of the tissues of the body. Its gravelly particles are the sands of life daily washed out of us, — reminding us always that we are wasting away. Whatever causes the body to waste rapidly, produces it in excess. We find it, therefore, in the urine of those who suffer from gout, rheumatism, dyspepsia, fevers, debility of the genital organs, straining of the loins, etc., which produce loss of flesh.

Treatment. — The remedies for this uric acid gravel are the *alkalies*, bicarbonate of potash, bicarbonate of soda and magnesia. The first named is generally the best. It may be used in the form of the neutralizing extract, — especially if there be costiveness. If the bowels do not need physic, let the potash be taken in the shape of lye made from hard-wood ashes (300). Fluid magnesia is an excellent remedy; so is liquor potassa, taken in twenty or thirty-drop doses. The urine must be watched, and these remedies discontinued when it becomes alkaline.

At the same time the stomach should be supported by some bitter tonic, as the infusion of quassia, gentian, columbo, Peruvian bark, etc.

Iron is, in many cases, not to be overlooked. If the patient be pale and bloodless, some of the preparations of this metal will be needed (61) (73) (74).

Acids must be carefully avoided, both in food and drink.

The diet must be plain, digestible and nourishing, and quite moderate in amount. The *quality* is of less consequence than the *quantity*.

Exercise is of great consequence, and must be regular, and, if possible, in the open air.

The skin must receive daily attention in the shape of an alkaline sponge bath, with friction. This will throw upon the skin much of the labor done by the kidneys.

Phosphatic Deposits.

These deposits are indicated by a state of the urine just the opposite of that which contains the uric acid gravel. They are contained in urine which is either alkaline when passed, or becomes so very soon by standing.

As the urine cools, a white sand falls to the bottom, and frequently a film forms upon the surface of the water. Looking at this film in different lights, you may see in it the several colors of the rainbow. Skim off this pellicle, place it upon paper, and let it dry; and you may then see the little shining crystals. This urine quickly grows putrid and offensive. Sometimes it smells strongly of ammonia. The more phosphates it contains, the sooner it becomes alkaline.

These deposits are generally the triple phosphates. Healthy urine contains the phosphate of magnesia in a state of solution. Under some circumstances, the urea of the urine is decomposed in the kidneys, and ammonia is disengaged. This combines with the phosphate of magnesia, and forms the triple salt of the phosphate of ammonia and magnesia, which is not soluble.

Symptoms. — A sallow complexion, a languid, spiritless state of mind, and an exhausted, debilitated condition of body. The urine is pale, rather copious, slightly turbid, has a low specific gravity, and smells unhealthy, having sometimes the faint odor of weak broth. There is generally derangement of the digestive organs, windy stomach and bowels, nausea, constipation, or diarrhœa, stools of various colors, and sometimes, in diarrhœa, resembling yeast, and an aching pain and weakness in the loins.

Causes. — These deposits are produced by great debility of the constitution, by injuries of the spine, dyspepsia, defective assimulation of food, bad diet, irritation of the neck of the bladder, and organic disease of the kidneys. But they are caused more especially *by whatever wears and exhausts the nervous system*, as heavy cares, depression of spirits, sedentary habits, great mental exertions, masturbation, and venereal excesses.

Treatment. — These deposits being connected with great debility, care must be taken not to make the matter worse by taking active purgatives, by extreme fasting, or by any means which will increase the weakness.

On the contrary, the strength must be supported by all the means that can be commanded. With this view, the citrate of iron (75) may be taken. Morphia combined with iron (80), to allay irritability, and impart strength at the same time, may be used. The valerianate of iron (93) is excellent for the same purpose.

Connected with a state of urine just the opposite to that which

holds the uric acid deposits, this form of gravel calls for the opposite remedies. Instead of the alkalies, the acids are wanted. The nitric and muriatic acids, with a vegetable tonic (76), may be used. Opium is spoken of in high terms, and is thought by some to have great power in turning alkaline urine acid. The compound balsam of sulphur is highly spoken of, and the compound infusion of trailing arbutus is also mentioned with approbation.

It is all-important to throw off care, and to give the mind a chance to rise up with all the elasticity it has. To bring this about, journeys and amusements are useful. The society of lively, laughing, witty friends will do a great deal to give the spirits a rebound, and the whole health an upward movement. Such persons are a blessing to the world; and he who reckons a few of them among his friends will live the longer for it.

The skin should have the benefit of the daily tonic effect of a sponge bath, with water at first tepid, and afterwards cool; and exercise, out of doors, should be habitual, and connected, as much as possible, with objects of pleasure.

The drinking of hard water is highly injurious; and if none other can be had, it should be distilled, and then spread out to the atmosphere, in shallow vessels, that it may recover its pleasant taste by reabsorbing air and carbonic acid.

Oxalic Deposits.

Oxalate of lime in the urine is the cause of this kind of gravel. It appears in the form of dumb-bells, and octahedral crystals. (Figs. 117, 118, and 119.)

Fig. 117.

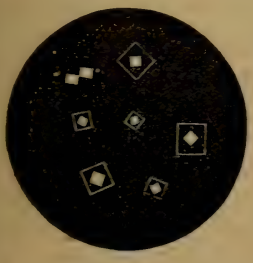


Fig. 118.

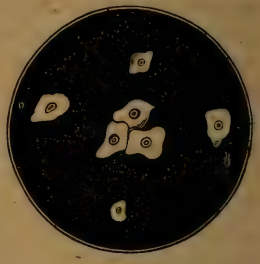
Fig. 119.

The urine has a specific gravity of 1.015 to 1.025, and is generally of a dark amber color, and clear, and bright; it is generally acid, though occasionally alkaline or neutral. Urea is generally found in it, and epithelial cells (Fig. 120). Unlike the uric and phosphatic urines, it is quite free from sediments, except, as often happens, there is a large amount of urea in it, in connection with the oxalate of lime.

When the urate of ammonia is combined with the oxalate of lime, it often happens that the latter has to be dissolved with a little liquor potassa, before the former can be seen with the microscope.

Symptoms. — Great depression of spirits, excitable state of the nervous system, painful susceptibility to external impressions, dyspeptic symptoms, and disturbances of the liver, a fear and dread of consumption, emaciation, inability to make exertion, — the smallest exertion causing fatigue, — in men a deficient sexual power, a pain and weight across the loins, and some irritability of the bladder.

Fig. 120.



Causes. — These deposits are supposed to result, like most other derangements connected with loss of flesh, in too great a degree of oxidation. Vegetables produce oxalic acid by just the opposite process, namely, deoxidation.

Whatever depresses the vital powers, may generate this deposit: as mental depression, overwork of the brain, burdensome cares, idleness of mind or body, masturbation, debaucheries, intemperance, venereal excesses, and injuries of the spine.

This deposit may also be produced by certain articles of diet, which contain the oxalic acid. Among these may be named the rhubarb plant, which in summer is largely used for tarts; and sorrel.

Treatment. — The treatment for these deposits should be very much like that for the phosphatic. The stomach and liver should receive some special attention. A pill of leptandrin, podophyllin, etc. (39), may be used with advantage. The preparation of nitric and hydrochloric acids (76) must generally be taken for some time. In cases of great irritability, the sulphate of zinc (82) does well.

The diet should be plain, digestible, and nourishing, — all articles containing the oxalic acid being rejected, as the rhubarb plant, sorrel, tomatoes, onions, etc.

For the rest, follow the directions for the treatment of phosphatic deposits.

Urate of Ammonia Deposits.

The urine which contains these deposits is generally pale, and of low specific gravity, about 1.012. It becomes opaque on cooling, from the deposition of a nearly white urate of ammonia. Instead of falling down readily, this forms ropy masses in the fluid, and looks like mucus or pus, or something between the two. Its real nature is discovered by applying a little heat, which quickly dissipates it.

Microscopic Characters. — Place a drop of this turbid urine between two slips of glass, and examine it closely with a microscope; you will see myriads of minute globules adhering together in linear masses. Now place a drop of the turbid urine in a watch-glass, and gently warm it; as soon as it has become clear, add a drop of hydrochloric acid to it, and when it is cold, examine it with the microscope. The muddiness will be gone, and you will now see lozenges, or thick cohering prisms of uric acid (Fig. 121). The explanation of this is,

that the hydrochloric acid combines with the ammonia, forming muriate of ammonia in solution, and liberating the uric acid crystals.

Fig. 121.

Fig. 122.

Urate of soda (Fig. 122) is sometimes found in urine, which has similar chemical reactions with urate of ammonia.

Causes. — These deposits are generally produced by some overeating, or derangement of the skin.

The treatment is the same as that for uric acid gravel.

Hippuric Acid Deposits.

These deposits appear in the healthy urine of the cow and the horse; and also in that of human beings, but in such small quantities as to be scarcely appreciable.

They sometimes, however appear in unhealthy proportions; but they never show themselves as a sediment, until after the addition of a stronger acid. The urine containing them is generally slightly acid or neutral, — sometimes alkaline, — having a low specific gravity, from 1.006 to 1.008. The triple phosphates are often found in it.

Fig. 123.

To detect these desposits, fill a large watch-glass with urine, and evaporate it over a lamp to a few drops. Then add to it about half its bulk of hydrochloric acid, and set it aside. The addition of the acid produces a bright pink color, and an odor like new hay. After a few hours, if the hippuric acid be present, its peculiar crystals will be seen. (Fig. 123.)

Cause. — In man, this deposit is supposed to depend on the absence of food having a good share of nitrogen. The urine of vegetable eaters contains it in largest quantities.

Treatment. — The only treatment required is a diet composed in good proportion of animal food, a proper attention to the skin by bathing, etc., and when debility exists, tonic medicines, as iron and bitters, with out-door exercise enough to keep the muscles in working order.

Cystine Deposits.

These do not occur in healthy urine, and rarely as an element in diseased action. They contain twenty-six per cent of sulphur.

Urine which contains cystine is of a pale yellow color, and has a low specific gravity. It frequently has an oily appearance, and its smell is peculiar, resembling that of sweet brier. Sometimes its odor is fetid, like putrid cabbage. On being kept for a short time, it has its surface covered with a pellicle which looks oily, and consists of a mixture of crystals of cystine, and the phosphate of ammonia and magnesia.

The cystine deposit appears to be diffused through the urine, which is always turbid when boiled. It is a white or fawn-colored powder, and falls to the bottom as a seidment. It undergoes no change by warming the urine, and this distinguishes it from white urate of ammonia. It is not soluble in diluted hydrochloric or strong acetic acid, which distinguishes it again from the earthy phosphates.

To test this deposit, add liquor ammonia to a portion of it, and shake them. If the deposit be cystine, it will dissolve readily. Allow a few drops of the solution to evaporate on a slip of glass, and the six-sided tables of cystine will remain, which may be examined under the microscope. (Fig. 124.)

Fig. 124.

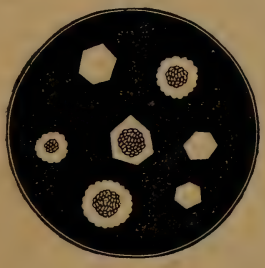


Fig. 125.

Fig. 126.

It is to be remembered that occasionally the chloride of sodium or common salt crystalizes in octahedral forms (Fig. 125), which, in some positions, may look very much like cystine. The ready solubility of the chloride in water, and the absence of all color when they are examined by polarized light, will prevent mistaking these crystals for cystine. If urine containing common salt be quickly evaporated on a slip of glass, and be then examined, instead of the octahedrons, we find crosslets and daggers. (Fig. 126.)

Causes. — An excess of sulphur in the tissues, a scrofulous constitution, and hereditary predisposition, with defective oxidation, and torpidity of the liver. It is often found in the urine of girls who have the green sickness.

Treatment. — The great object is to improve the general health, which is to be done by attending to the skin, and the administration

of iron and bitters, and also alteratives. The syrup of iodide of iron is a valuable remedy. Podophyllin and leptandrin (34) are wanted to regulate the liver. The nitro-muriatic acid (76) should be tried.

The daily sponge bath, and daily exercise, as in most chronic complaints, must on no account be neglected.

Stone.—Calculus.

It often happens that the proper treatment for removing urinary deposits is not adopted in season. In such cases, gravelly particles, finding a lodgment for a time, in the kidneys or bladder, are apt to draw other particles to themselves, which become fastened to them, and form a layer quite round them. Over this, other layers form in succession, until a stone is produced so large that it cannot pass off. These grow to various sizes, — being sometimes so large as to fill the bladder.

Uric Acid Calculus. — The most common of these formations is the uric acid calculus. It is generally smooth or slightly tuberculated on the surface, and varies in color from a pale yellowish-fawn, to a reddish-brown. When sawn through the centre, its layers will be found tolerably regular, but of different thickness. (Fig. 127.)

To test it, place a small fragment upon platinum foil under the blowpipe. If uric acid, it blackens, and gives out an odor like burnt feathers mixed with the oil of bitter almonds.

Fig. 127.

Fig. 128.

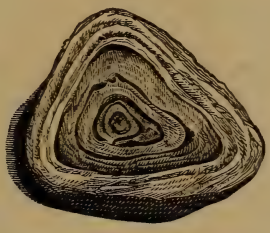
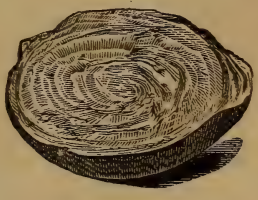


Fig. 129.



Mixed Calculus. — These calculi are frequently composed of two or more different kinds of matter arranged in irregular layers. Fig. 128 is a mixed calculus, — the dark layers being oxalate of lime, the light ones, uric acid.

In testing such, fragments of each ingredient should be separately examined.

Urate of Ammonia Calculus. — We occasionally meet with a calculus composed of the urate of ammonia. These calculi, when found, are generally small in size, smooth or slightly tuberculated upon the surface (Fig. 129), and of a pale slate or clay color. When heated before the blowpipe, it gradually disappears.

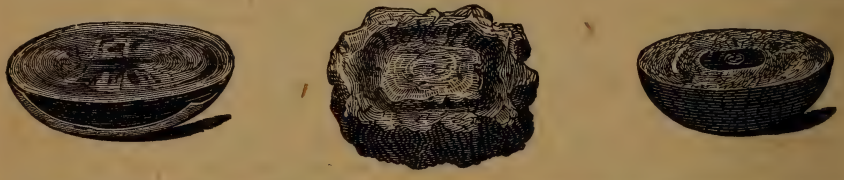
Phosphate of Lime Calculus. — This has a smooth polished surface, and quite regular layers, which separate easily when the calculus is cut asunder. It has a pale fawn or stone color. (Fig. 130.)

It chars before the blowpipe, and gradually becomes white as the carbon burns away. Diluted nitric or hydrochloric acid dissolves it without effervescence.

Oxalate of Lime Calculus. — This is frequently met with uncombined with others, but more generally its nucleus is uric acid or urate of lime. It commonly has a brown, dark olive, or dirty-purple color. Its surface is irregular and somewhat rough. It looks like the fruit of the mulberry, and is known as the *mulberry calculus*. (Fig. 131.)

It dissolves, without effervescence, in diluted nitric or hydrochloric acid. When thus dissolved, the addition of a little ammonia will cause it to fall to the bottom as a white precipitate.

Fig. 130. Fig. 131. Fig. 132.



Fusible Calculus. — This is a mixture of phosphate of lime, and the phosphate of ammonia and magnesia. It is the most common of all the calculi, except the uric acid. It has an oval, irregular form (Fig. 132), and is white, soft, and friable, like chalk. Sometimes it is hard.

It may be known by the readiness with which it melts down before the blowpipe, without being consumed.

Causes. — The causes of the different kinds of gravel have been already explained. Generally stones of the bladder are formed in the kidney, and descending through the ureters into the bladder, are prevented from passing out through the water-pipe by an enlarged prostrate gland. Remaining in the bladder, they soon get encrusted over by other matters in the urine, and grow by accretion to be stones.

Symptoms. — When a stone in the bladder reaches a certain size, especially if it is rough, it always produces suffering. A dull, annoying pain is felt at the end of the penis. The desire to make water is frequent, and there is a sense of weight in the perineum. Sometimes the stream of urine is suddenly stopped by the stone falling on the orifice of the urethra. As the bladder becomes nearly emptied, it embraces the stone, and the pain is increased. Jolting in a carriage causes great pain. Mucus passes off with the urine, and sometimes blood. After a time, the appetite fails, hectic sets in, albumen appears in the urine, and the patient sinks under inflammation of the bladder.

These symptoms being found in diseases of the kidneys and bladder, no one is authorized to pronounce upon the existence of stone, until the stone has been touched by a metalic sound introduced into the bladder.

Treatment. — The only effectual treatment is a choice between two operations, — *lithotrity* and *lithotomy.*

The former consists in introducing an instrument, a kind of forceps, into the bladder, through the urethra, taking hold of the stone, and crushing it. The preparatory treatment consists in correcting the unhealthy state of the urine, and the frequent introduction of bougies or sounds to enlarge the water-pipe for the easy entrance of the crushing forceps. The after treatment consists in diluent drinks to increase the urine, injections of warm water to wash out the fragments, with hip baths, soothing injections, and leeches or cupping upon the perineum.

Lithotomy consists in making an incision into the bladder through the perineum, and taking out the stone or stones whole.

Dropsy of the Belly.—*Ascites.*

This is a collection of water in the cavity of the belly; sometimes the fluid is outside of the peritoneum, and next to the muscles.

Symptoms. — An enlargement of the belly, with a sense of distension and weight, — particularly on the side on which the patient lies. When the collection of water is large, the breathing becomes short and difficult, and the swelling is uniform over the whole abdomen.

In some instances the fluctuation of the water may be distinctly heard when the patient moves about, — just as we may hear the water in a half-filled barrel when it is rolled over. This sound of the fluid, when heard, distinguishes the complaint from pregnancy, and from the drum-head state of the bowels. This fluctuation may sometimes be produced by pressing upon one side of the belly while the patient is standing or sitting, and striking the other side with the ends of the fingers of the other hand.

In some cases, there is loss of appetite, dry skin, costiveness, scanty urine, oppression of the chest, cough, colic pains, and variable pulse.

Causes. — A frequent cause of this complaint is chronic inflammation of the serous membrane which lines the abdomen, — I mean the peritoneum. It may also be produced by scarlet fever, fever and ague, disease of the heart, particularly dilatation of the right cavities, and diseases of the liver, particularly the shrivelled, hobnail condition of the liver, — in short, whatever causes a pressure upon the portal veins, and obstructs the venous blood returning from the intestines.

Treatment. — The remedies for this disease are mainly diuretics and purgatives. The bowels may sometimes be reduced in a few days from an enormous size, by medicines which excite the action of the kidneys. Digitalis, combined with acetate of potash, etc. (130), forms an excellent preparation. The patient should have as a constant drink, a strong infusion made from two parts of hair-cap moss, and one each of juniper berries and dwarf elder bark; also an infusion of queen of the meadow.

The purgatives used in this complaint are those which produce

watery stools. One of the best of these is elaterium. It will sometimes carry off the water with great rapidity; combined with some active cathartics (31), it will have all its good effects without the griping it is apt to occasion alone.

Cream of tartar, taken in large doses, every day, will sometimes do well. Epsom salts produces watery stools, and is a good remedy.

For promoting absorption of the fluid, the iodide of potassium, taken in from three to ten-grain doses, three times a day, is a valuable medicine in many cases. The compound infusion of parsley is said to be still better.

The skin must receive careful attention. The alkaline sponge bath, with friction, will increase the transpiration of fluid through that organ. Exercise does much to keep up an active circulation, and to lessen dropsical effusions.

The strictest temperance, both in eating and drinking, must be observed. A light and nourishing diet, with water, tea, and the diuretics named above for drinks; beyond these the patient must not go.

A kneading and shampooing of the bowels once a day has an excellent effect; it gives activity to the circulation in obstructed veins. A bandage tied close around the bowels, and tightened as the water diminishes, has an effect upon the sluggish vessels similar to that of the laced stocking in varicose veins of the legs. It lessens the liability of a return of the complaint.

Dropsy of the Cells.—General Dropsy.—*Anasarca.*

Just under the skin is a membrane composed chiefly of cells, called the cellular membrane. When a considerable part, or the whole of these cells are filled with a watery fluid, we call the complaint *anasarca*, or *cell dropsy*. If, beside this, there is a collection of water in the large cavities, we give it the name of *general dropsy*.

Symptoms. — The disease generally begins with a swelling around the ankle and leg, which is more visible at night after standing and walking, and is less perceptible in the morning in consequence of the horizontal position of the night. To the touch of another person, dropsical feet and legs feel a little colder than natural; and when hard pressed with the finger, a pit will be sunk in the flesh, which remains some time before it fills up. As the disease advances, the skin of the legs becomes smooth, shining, and sometimes even cracks open to let out the water. The limbs, and indeed the whole person become stiff, heavy, and clumsy.

As the disease advances, and ascends to the belly and chest, there is shortness of breath, a sense of suffocation on moving or lying down, a tightness and distress across the epigastrium, thirst, dryness of skin, wakefulness, loss of appetite, scanty and deep-colored urine, and a slow fever.

Causes. — General dropsy is caused by whatever weakens the general system, and by such circumstances as obstruct the circulation in

the veins. The most frequent causes, therefore, are certain diseases of the heart and kidneys.

Explanation. — Modern physiology has demonstrated that the veins do a certain part of the work of *absorption.* The serous membranes which line the larger cavities of the body exhale watery fluid enough, and no more than enough, to keep them moist, and cause the organs within to play smoothly upon their surface. If the fluid were not taken away as fast as it is poured out, the cavity, — being a shut sac, — would become full, and we should have dropsy. It is the office of the veins to absorb this fluid and convey it away in the general current of the blood.

This is the method of their doing it: The walls of the veins are so constructed as *to permit watery fluids to pass through them, either in or out.* When they are comparatively empty, or only moderately full, fluids on the outside pass *in,* and mingle with the contents. This is called *endosmosis.* When they are very full, the watery portion of the blood will filter through, and pass *out.* This is called *exosmosis.*

Now, if the reader will think a little, he will easily see that if the veins are barely full enough not to allow any fluid to *pass in,* the natural exhalations of the shut sacs would bring on dropsy; but if the veins are so full as to cause water to *flow out,* then the dropsical accumulation will be still more rapid.

Such being the office and nature of the veins, the reader may learn how *disease of the right side of the heart* will cause dropsy. When the right ventricle is so dilated and weakened that it cannot send the blood forward to the lungs, of course *the veins which bring it to the right side of the heart, will become full, and greatly distended.* Exosmosis will then occur; the watery portion of the blood will begin to *run out, either into the large cavities, or into the cells, and dropsy, either general or local, will be the result.*

Treatment. — This must be governed very much by the cause of the disease.

In dropsy from disease of the heart, we may use diuretics and such other measures as are recommended for dropsy of the belly. If the urine is strongly acid, depositing the brick-dust sediment, the alkaline diuretics will be the best, as the acetate and bicarbonate of potash combined, and dissolved in water. The bitartrate of potassa, to act upon the bowels, is a proper remedy. If the disease arise from general debility, the following powder will be useful: digitalin, three grains; cinchonia, half a dram; phosphate of iron, half a dram; and white sugar, one dram. Mix, and triturate; divide into sixteen powders, and give one, in pumpkin-seed tea, four times a day.

VENEREAL OR SEXUAL DISEASES.

Of all the diseases to which flesh is heir, none bring so much misery, moral and physical, as those called sexual or venereal. To the physician, they are the source of the greatest anxiety and perplexity. They bring him into possession of the most delicate secrets, — secrets which involve the peace of families and neighborhoods, — secrets which his honor as a man, and his truth as a physician, compel him to lock fast in his own breast, and hold sacredly apart even from his nearest companions, — secrets which, if revealed, would fill domestic circles with unutterable bitterness and heartburnings, and whole neighborhoods with scandal and immorality. These secrets are often a burden to him. They are in his breast like undigested food in the stomach, — disturbing the whole nature.

The patient, if a man of sensibility, suffers even more, of course, than his physician. In many cases, he is a man of virtuous intentions, and perhaps of religious habits, who has fallen in a moment of temptation; and he fears that the effect of his sin will spread itself through his whole system, and extend to the end of life; or, still worse, that having poisoned the fountain of his life, it will go down as a heritage of misery to his offspring; or, what he would deprecate as almost equally calamitous, that the partner of his bosom may become the innocent partaker of his disease.

In this state of apprehension, he turns to his physician, not merely to keep his secret, but to cure his disease. How great a pity, that in such circumstances, he does not always fly immediately to an honorable physician, instead of seeking the advice, as many do, of those miserable quacks, who lure him to their dens only to get his money, having no intention or ability to cure his complaint.

These diseases are divided into two great branches, characterized, in part, by different symptoms, and generally held to be entirely different complaints. The first to come under consideration is

Pox. — *Syphilis.*

This disease had a very early origin. It was known among the Jews, as we learn very clearly from the 15th chapter of Leviticus. Dr. Adam Clarke's Commentary upon this chapter, at least, makes it apparent. David, the king of Israel, has unconsciously left on record,

in the XXXVIII Psalm, a most graphic description of Tertiary Syphilis, experienced in his own person. Dr. Clarke says: "It is most likely the Psalm was written in reference to some severe affliction that David had, after his illicit commerce with Bathsheba; but of what nature, we are left to conjecture from the third, fifth, and seventh verses." The Psalm is dated not quite a year after the act alluded to, — about the right time for the terrible symptoms David describes to make their appearance.

The term syphilis is from a Greek word signifying filthy. There is one unvarying sign of this disease, — the existence of an ulcer or ulcers, usually upon the genital organs. The French call this ulcer a chancre. The common name is simply venereal sore, or ulcer. A pimple first appears; on the summit of this a pustule forms; then the rupture of the top of this, brings to view the ulcer or sore. This ulcer is shallow, more or less circular or oval in form, bounded by a perpendicular and slightly jagged border, and furnished with a smooth, yellow base, moistened by an unhealthy secretion. The skin around the sore is a little thickened and inflamed. This is a simple venereal ulcer. It generally lasts about five weeks, and then heals.

But it is not always thus simple. It may be an inflammatory chancre, attended by excessive inflammation. It may be what is called a *sloughing chancre*, characterized by the perishing and falling off of large parts of flesh. It may be *gangrenous*, or marked by a tendency to mortification. It may be *phagedenic*, or *eating*, — being distinguished by a rapid loss of substance, or eating away of flesh. Or, finally, it may be *indurated*, — being noted for the peculiar hardness of the base, and of the flesh immediately around it.

A venereal sore is the result of impure connection with a person having the syphilitic disease. The poisonous secretion of a sore, applied to the skin of a healthy person, produces *inoculation*, and a new sore upon the previously healthy person is the result. This chancre appears in a few days after coition, — a certain time being required for it to produce its effect, as in the application of vaccine matter to the arm.

Bubo. — The next symptom in the order of occurrence, which frequently follows the ulcer, is the bubo. It is named from a Greek word which means groin, — from its usually appearing in that part. It is a painful swelling of the inguinal gland in the groin, and is caused by the absorption of virus or poisonous matter from the chancre. This gland is one of the lymphatics, a class of vessels as numerous, all over the system, as the veins and arteries. They are likewise called absorbents. Those that originate from the private parts, absorb the poison from a venereal sore, and convey it to the glands in the groin, which, being poisoned by it, inflame and swell.

The bubo generally appears in from one to two weeks from the appearance of the ulcer. It is usually upon the same side which the chancre occupies upon the penis. When the bubo advances to suppuration, and becomes an open sore, it is then a glandular chancre.

Vegetations. — These are peculiar growths appearing upon differ-

ent parts of the skin, which resemble certain vegetables. They are found most frequently, in the male, on the head of the penis, and on the membrane lining the foreskin. In the female, they are found at the entrance to the vagina, and not unfrequently, in the vagina itself. They sometimes appear on the neck of the uterus.

Primary Disease. — Thus far, the diseases noticed are what are called *primary*. If properly treated, and cured in season, the constitution is not infected, and no subsequent troubles appear. But a result so fortunate as this, is not common. Generally, the treatment is either too long delayed, or is too brief and superficial. The poison is, in consequence, absorbed into the circulation; the whole constitution becomes infected; the fluids and solids are so acted on and altered, in fact, that a *special constitution is created.* For this reason, the affections of the skin, the mucous membranes, the bones, etc., which follow, are called

Constitutional. — These constitutional diseases never appear immediately, as the result of an impure connection, but only *after* those affections already noticed. The primary diseases are local; the constitutional affections are general.

The first thing which strikes the eye in these constitutional complaints, is the *color* and *appearance* they give the skin. It has a *reddish, coppery* tinge, and a peculirly *dirty* appearance.

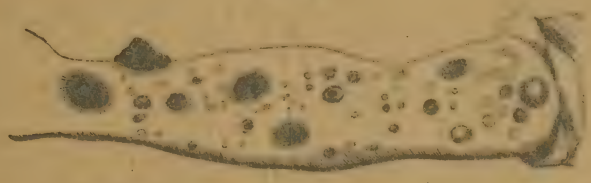
The order in which the several parts are affected, are, first, the skin and mucous membranes; second, the hard substance surrounding the bones, called *periosteum*, the tendons, and the bones themselves. Those affections which appear upon the skin and mucous membrane are usually called *secondary*, because they are the *second* to appear; while those affecting the bones, etc., are denominated *tertiary*, because, in the order of their appearance, they are in the *third* class.

Eruptions of the Skin, and Ulcers. — Of the constitutional eruptions, there is a great variety, — so great that I cannot, in small space, give a minute description of them. The breast and arms are not unfrequently the first to be affected. Attending these eruptions, there is little uneasiness, and no pain; though there is sometimes a slight itching. The first breaking out is usually of a *copper color*, somewhat paler than it subsequently is. The eruption is often in the form of blotches, — elevated only a very little above the skin. They are composed of small pustules, with a little fluid in them, which soon dries away, and the whole may be rubbed off like bran. This may leave the skin looking tolerably sound, and inspire the belief that no further mischief is to be experienced. No hope can be more delusive. *Parts afflicted with this complaint, show no tendency to heal.* The first crop of pimples is soon followed by a second, which produces a thicker crust, and yields a larger amount of bran. This rubbed off, small ulcers appear underneath.

Vesicular Eruptions. — There is another syphilitic affection of the skin, which appears in the shape of vesicles, like small-pox. These dry and leave a scab.

Scaly Eruptions. — There is still another affection, which is in form of scales, and one scale will be piled upon another. It be with an eruption of copper-colored blotches, which become cov with scales; these are succeeded by scabs, and when these fall shallow ulcers are left with copper-colored edges. (Fig. 133.) T is a stubborn form.

FIG. 133.



Tubercular Eruptions. — In another variety of the disease, broad, red, copper-colored tubercles, or hard elevations appear, most commonly about the sides of the nose, or on the cheeks. Gradually, they suppurate, and are succeeded by deep ulcers, terminating in scars. This is an unfavorable form of the disease, and usually appears some considerable time after the primary symptoms, in persons whose constitution has been shattered. PLATE V.

This rather belongs to the tertiary form of the disease; and in addition to the above, patches of unhealthy inflammation are apt to form on the tongue, and after a time, break, disclosing ragged, orange-colored ulcers. PLATE VI. Fig. 2.

Many other forms of eruption exist; but in a popular work like this, it would be useless to make the nice distinctions which their description would require.

Some of the worst forms of the secondary affections, are found upon the mucous membrane of the mouth and throat. These correspond, in number and kind, with the affections of the skin. They affect the lips, the internal sides of the cheeks, the tongue, the tonsils, the pharynx, the soft palate, the nasal cavities, etc. They are terribly destructive in their effects, — forming gaping ulcers, and eating deeply into the parts. They often make shocking work in the whole mouth and throat; and, when attended with considerable inflammation, make it almost impossible to swallow anything, or even to open the mouth. I have often seen breaches through the palatine arch (PLATE VI. Fig. 1), and even the whole arch destroyed (PLATE VI, Fig. 2). Persons have often died from starvation, — not being able to swallow. The ulcers sometimes take hold of the tonsils, and "dig them out as if it were done with a punch."

These ulcerations affect the mucous membranes of the genital organs. In the female, they often affect the vagina, and the neck of the womb (PLATE VII, Fig. 2); and these may exist for a long time, as the cause of whites, without being suspected as such. They affect also the mucous lining of the fundament and the large bowel. They sometimes exist in the ear, and more often in the eye. This latter affection passes under the name of syphilitic iritis. In PLATE V,

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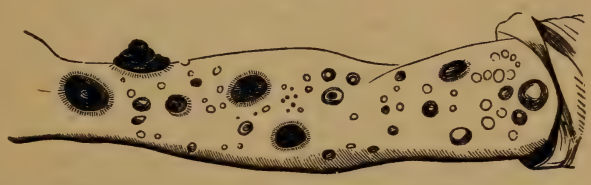

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the artist has well represented this form of constitutional disease in the eye.

The disorder, having, by frightful ulcers, run riot upon the delicate structures of the skin and mucous membranes, advances boldly onward, attacking the muscles, the tendons, the hard covering of the bones, and the solid bones themselves. No part of the human frame, — not even the skeleton, — can escape this devouring complaint. The bones of the nose and face are generally the first to be attacked. These perish slowly, — falling away, piece by piece, — the nose, in the mean time, sinking down nearer to a level with the cheeks. From these parts, the disease may spread to the bones of the whole system.

These affections of the bones, are attended by pains of almost every kind and degree. These pains are sometimes fixed in one place; at other times, wandering, — the whole skeleton being painful. In these latter cases, they seem to the sufferer to reach the very marrow. Sometimes when the pain is fixed in one place, the feeling is such as might be supposed to be experienced if the bone were being *bored*. These pains are most terrible during the night.

Upon those parts where the skin is near the bone, as the forehead, or shin, syphilitic nodes or tumors often appear, which are hard, like cancerous tumors. Beside the above, there are the loss of the hair (alopecia), blindness, deafness, and various other mischiefs, resulting from syphilis which need not be described.

Is the Constitutional Disease Communicable? — Many believe, — even among those who are eminent in the profession, — that the constitutional forms of the disease are not communicable. A few years ago, indeed, this latter opinion was *generally* received. It is now quite extensively doubted, or rather, disbelieved. Facts are constantly occurring under the eye of unprejudiced physicians, which make it very evident that the constitutional disease may be communicated from one person to another.

The Disease Hereditary. — It is no small amount of suffering, bodily and mental, which the individuals endure who contract this disease. But the inflictions visited upon them, severe as they are, are small, compared with the aggregate of ills entailed by it upon the long line of their posterity. Whether it be the man or the woman whom the syphilitic virus has inoculated, if it be allowed to be absorbed, so as to affect the constitution, it will be very likely to be sent down to the children, and children's children. The divine law which links the sins of the fathers with the sufferings of even the third and fourth generation, is nowhere more painfully illustrated than in the scourging descent, through many generations, of this terrible disease. It may be passed down to posterity by either of the parents; but if both be diseased, its transmission will be the more certain. If the mother be infected, she will infect the child while carrying it. If the father's constitution be poisoned, the child will receive the infection from him, through the semen, and will be likely, while in the womb, to infect the mother. I recollect but one author of note

(Ramsbotham) who has mentioned this mode of infection. I have myself seen two cases of it.

This constitutional disease, whether it exist in the mother, or be communicated to the child, and thence to her, by an infected father, is a frequent cause of abortion. Throughout nature, blight is the result of a diseased parentage. Mature fruit is seldom obtained from infected seed.

Is the Constitutional Disease Curable? — No question connected with the complaint possesses a greater interest than this. None is pressed more earnestly upon the physician. In a certain sense the disease *is* curable. Its outward manifestation may be wholly repressed. The health of the person suffering from it may be restored, and become, in an important sense, good. *But this cure is never brought about by nature; it may be, and is often effected by medicine.* I have never failed to effect such a cure in any case which has come under my treatment. Such results may properly, in general terms, be called cures.

Yet there is a sense in which a cure never occurs. It is a well-attested fact, that a system once thoroughly pervaded by the poison, is never completely purged of it. It may be shorn of all its active malignancies; but it has too intimately permeated the tissues and solid bones, to be wholly expelled. Pursue it as we will with the remedial forces of our art, it still takes refuge in the most subtle processes of animal life, — still infects the currents of being, and finds expression in the scrofula, in the lupus, and in the scaly affections of other generations. Dr. Erasmus Wilson, the great authority in skin diseases, says: "I feel convinced that a considerable proportion of those diseases which pass under the name of scrofula, are the produce of the syphilitic poison, — are, in fact, not scrofulous, but syphilitic." Astruc thought the same, and suggested, what is doubtless true, that the transmission of syphilis must occur through several generations before it becomes scrofula. Bierchn, Camper, Stoll, Portal, Hufeland, and Alibert, have all advocated the same opinion.

This is doubtless right, though there are many authorities on the other side. He must be a poor observer who cannot discover a probable filial relationship of scrofula to syphilis.

A variety of facts, admitted by the whole profession, go far towards demonstrating this relationship. Scrofula is always hereditary. It is a disease of the parent, imparted to the offspring. But there is scarcely any disease so certainly sent down to posterity as syphilis.

Scrofula is *like* syphilis in many of its characteristics. It is like it in its power of propagating itself from parent to child. It is like it in affecting nearly *all* the children of diseased parents. It is like it in the variety of the structures it attacks, — affecting the skin, the mucous membranes, the bones, etc. Like syphilis it produces hard tumors, ulcers of the skin, abscesses, and decaying of the bones. And finally, the great remedy for tertiary syphilis, iodide of potassium, is likewise the great remedy for scrofula; and, indeed, almost every remedy which acts favorably upon one, is found useful for the

other. This could hardly occur were not the diseases identical in nature.

We can scarcely be surprised that a disease so widely diffused as scrofula should be the product of syphilis, when we reflect how frightfully prevalent were the causes of this latter affection during the earlier and the middle ages of the world.

To pass over the records of earlier times, with merely mentioning Abraham, and Lot, and Jacob, and Reuben, and Samson, and David, and Solomon, and numerous females, of whom some singular things are written in the elder scriptures, and omitting all mention of the incredible and almost universal debauchery and prostitution of Greece, and Rome, and Persia, and Media, and Egypt, I may say that *Europe, in the middle ages, was well-nigh converted into a vast brothel.*

Foremost in the race of profligacy, were the priests, bishops, kings, and emperors. The licentiousness of Childeric knew no bounds. He carried off and violated the wives and daughters of his vassals, without regard to any right, human or divine. His successors were generally a race of lecherous men, who spread debauchery on every hand. The French monarchs, from Pepin and Charlemagne, were a race of debauchees. Their courts were national brothels, in which the finest women in the land were trained in the arts of seduction and lust. Francis I., in 1515, endeavored to invest prostitution with elegance and chivalry, and even to ennoble it, by abandoning the public women of the palace to his subaltern officers, and substituting for them, ladies of noble blood. In this movement, the nobles and the clergy gave the king their support. The right of sleeping with their female vassals the first night after marriage was religiously insisted on by bishops and abbes, as high barons, and exercised as their privilege. The inferior clergy were content to haunt the taverns and stews, and the monks paid their pimps with the wealth of the church. The grand vicar, in some dioceses, sold indulgences to commit adultery for a year; in others, a cask of wine paid for the right of fornication for a lifetime.

Brantome justifies Francis in his selection of girls of noble blood, on the ground that "they could not communicate the venereal disease to the noblemen of the courts, like the common prostitutes." But the king, who was previously diseased, infected them; and these noble women, so called, passing from the arms of the prince to those of the courtiers, presented to them the fatal infection received from the king.

The way in which Francis himself was infected, illustrates, in a most shocking manner, the morals of the times. His illicit loves with the Belle Ferronière, were not concealed from her husband, who, though obliged, outwardly, to regard the dalliance of his wife with the monarch as an honor, was inwardly indignant, and determined to become infected himself, and thus disease his wife, and revenge himself upon the king. This plan was suggested to him by a monk, who had another motive, namely, that of punishing Francis for his liberality to the Lutherans. "How," said the husband, when the

suggestion was made, "shall I give this disease to my wife, when we are both sound?" "Go visit an infected girl," said the monk, "and to render the matter certain, as I am infected, I will see your unfaithful wife." The result was such as the husband desired; and in 1547, Francis I., the gay and chivalric monarch, perished of the most foul and loathsome of all diseases.

Debauchery did not die with him. It was cherished by his successor, Charles IX., and his mother, Catherine de Medicis, and his grandson, Henry III. The reigns of Henry IV., Louis XIII., Louis XIV., the Regency, and of Louis XV., were stained by the same licentiousness and disregard of public decency, until the whirlwind of the revolution came to purify the moral atmosphere.

The reader will now, I think, be in no mood to wonder that the kings and queens of Europe, and the whole royal progeny, whether the dishonored occupants of thrones, or the more private recipients of the public bounty, are a scrofulous and degenerating race. Nor need it be much wondered at, that so large a portion of men and women everywhere have more or less scrofula in their frames. Happy are those who can find no trace of this complaint in their constitution! They should rise up and call their virtuous progenitors blessed. They should especially thank God that they have sprung from the loins of a race more noble and kingly in the eyes of Heaven than all the royal lines of all Europe.

Treatment of Syphilis. — In the treatment of this disease, the first thing which requires attention is the pimple, pustule, or sore. This must be instantly touched with caustic. There should be no delay, for if the sore be not syphilitic, the caustic will do no harm; and if it be, the most terrible results may be averted. The general belief is that poison remains in the sore for a time before it is absorbed into the constitution. It is of the utmost importance that it be destroyed before the absorption takes place.

The caustics used are nitrate of silver (stick nitrate), nitric acid, chloride of zinc, potassa with lime, caustic potassa, and the painless caustic.

The nitrate of silver is much used, but the best surgeons now regard it as useless. It does not prevent the absorption of the poison. The caustic potassa, the potassa with lime, and the painless caustic, are the sure remedies, — that is, if applied in season. But they must be employed with caution. It will not do to trust them in bungling hands. A little vinegar and water must be immediately used to neutralize the caustic when it has accomplished what we desire. After the sore is cauterized, a piece of lint, dipped in a solution of watery extract of opium, one dram to four ounces, should be laid on it; and the organ inveloped in another piece of lint soaked in tepid water, and covered in oiled silk. The patient should remain at rest as much as possible, — keeping the penis elevated, and repeating the opium dressing to the wound, and the water dressing to the whole organ, night and morning. In addition, the patient should take two pills (19) to be followed, night and morning, for three or four days, with

a tablespoonful of (20). In some cases, a piece of lint, wet with the tincture of muriate of iron, diluted and kept upon the chancre, will cause it to heal kindly, and with safety to the patient.

If this treatment be adopted *early* and *properly*, the patient is cured, and nothing further is needed. But time is generally lost. The poison is absorbed before the patient is seen by the physician; and the question then is, how it is to be driven out.

To accomplish this, the diet should be regular and unstimulating; alcoholic drinks and tobacco should be forbidden; the mind should be kept at rest; a cold or tepid bath should be taken daily; the action of the bowels and kidneys should be kept properly regulated. These things will put all the expelling agencies in proper condition for work; and no single medicine will put them all into action like mercury. For this reason, no other single drug has enjoyed a reputation for curing pox so wide as this.

But it must be used with judgment. No remedy is more safe, if judiciously employed, or more destructive, if abused. The profuse and ill-considered way in which it was used in former times, raised a prejudice against it, which is unreasonably cherished at the present day. Abuse *made* mercury a curse; judicious use *makes* it a blessing, — at least in this disease.

The blue pill is one of the best forms of it (148), combined with extract of henbane. One pill at night is the usual amount to be taken. Some prefer the mercury with chalk (149); others, the corrosive sublimate (150); others, the proto-iodide of mercury (136). Some one of these should be given about five days, in the doses named under the recipes, — being careful not to produce salivation. After the fourth or fifth day, we can generally increase the frequency of the dose. Should salivation be accidentally induced, it should be arrested by a solution of chlorinated soda (205), one part to twelve of water. The mercurial treatment should continue for a week after the sore has disappeared; and in the case of the indurated sore, as long as there is any hardness.

Water should be taken freely, and various diluent drinks. They wash the poison out through the millions of avenues, called pores, just as we wash filth out of cities by pouring water into the sewers.

Recently, Ricord, the great French authority on this subject, has introduced a new treatment of syphilis by *iron*. One part of the potassio-tartrate of iron is dissolved in six parts of water, and two teaspoonfuls are given three times a day. The same solution is applied to the external sore or chancre. Ricord says that no secondary symptoms have been known to occur after this treatment. The London Lancet sanctions this treatment as being capable of doing all that Ricord claims. Should its success prove equally great in this country, it will take rank among the greatest gifts to the profession. I sincerely hope that in a future edition of this book, a full trial of the remedy on this side of the Atlantic will permit me to record such success.

I should mention that there are those who claim to cure the disease with other remedies, without mercury, and I am not disposed to be

Fig. 2.

Fig 1

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The blue pill is one of the best forms of it (145), combined with extract of hemlock. One pill at night is the usual amount to be taken. Some prefer the mercury with chalk (145); others, the corrosive sublimate (170); others, the proto-iodide of mercury (136). Some one of these should be given about five days, in the doses named under the recipes, — being careful not to produce salivation. After the fourth or fifth day, we can generally increase the frequency of the dose. Should salivation be accidentally induced, it should be arrested by a solution of chlorinated soda (205), one part to twelve of water. The mercurial treatment should continue for a week after the sore has disappeared; and in the case of the indurated sore, as long as there is any hardness.

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Fig. 2.

Fig. 1

dogmatical, and say it cannot be done. For this purpose, perhaps as good a recipe as has been proposed, is the compound syrup of stillingia, tincture of poke root, tincture of sheep laurel, each four ounces, mixed; of which, from a teaspoonful to half a tablespoonful is to taken three times a day. I think well of this remedy, especially if it be in connection with a small amount of mercury.

The Bubo, if not attended with pain, may be treated with compression; by a piece of plaster of ammoniac with mercury; or by touching it with nitrate of silver. Should there be inflammation, and the formation of matter be inevitable, the bubo should be opened by touching it with the caustic potassa; and the resulting sore must be treated with the solution of opium and water dressing. Should the sore need stimulating, it may be touched lightly with nitrate of silver.

Eruptions upon the Skin. — In treating the disease after it appears upon the skin, etc., we shall derive great advantage from the use of either the warm or the vapor bath once a day. With this, if the case be not very old, we may employ (148) or (150); but if the disease be an old one, showing itself in the throat, or attacking the bones of the face, we must give iodide of potassium (138), combined with compound decoction of sarsaparilla. This is the great remedy for tertiary syphilis; but when the case is obstinate, it may sometimes be discontinued, and the corrosive sublimate (139) be substituted for it.

It is to be observed that the older the disease grows, and the more chronic its character, the more does mercury lose its control of it. In the first attack, the blue pill is the best; in the second, as a general thing, the iodide or the biniodide of mercury; in the third, the corrosive sublimate; in the attacks, subsequent to this, particularly in the tertiary form of the disease, the iodide of potassium. When the throat and nose are so ulcerated as to make a case absolutely terrible to contemplate, it is surprising to see how rapidly the recovery will often take place under the influence of this latter remedy.

For syphilitic iritis, apply frictions twice a day on the eyelids and eyebrows with ointment (172) (173); and administer internally two pills of (136), daily.

Case I. — Mr. ——, aged sixty, was sent to me by his physician, from the State of ——. He had deep and extensive ulcers in the upper cavity of the throat, extending to the tonsils, and to the arch of the palate. Swallowing had become very difficult, and much fear was felt both by the patient and by his physician, that death would follow at no distant day, from absolute inability to swallow at all. The ulcers had the peculiar yellow color which so clearly marks these sores. I informed him that his disease was tertiary syphilis. He said he had once had the disease, many years before, but had supposed himself cured. The letter brought me from his physician, a most respectable man, showed that *he* also had no suspicion of the real nature of the complaint. This case is well represented by PLATE VI, Fig. 1.

I put this patient upon a preparation of iodide of potassium, and several other articles, which I keep on hand, and syringed his throat once a day, with a weak solution of the acid nitrate of mercury (226), and in one week, he swallowed his food easily. In three weeks, he went home, his throat was nearly well, and his bodily health, which had been much shattered, restored. His physician, much astonished at his altered condition, wrote immediately to know what I had done for him. This patient, though in humble circumstances, has ever since, sent me an annual present, which, though not of great value, is highly prized by me as evincing a gratitude not forgetful of peculiar benefits.

Case II. — In the summer of 1856, a gentleman of distinction came to me from a distant state; and, being so much reduced as to make it doubtful whether he would ever reach Boston, he brought his family physician with him to render him assistance on the journey in case of possible emergency.

His voice was reduced very nearly to a whisper. I found a breach through the palatine arch, and considerable ulceration in the back of the pharynx, though not as much as is represented in PLATE VI., Fig. 1. He was harassed with a cough, and his flesh and strength were so far reduced that his high official duties had been for some time laid aside. He was supposed by his friends to be verging towards the last stages of consumption; and their consent was gained for his journeying to Boston, only because, as they supposed, no hope opened to him in any other direction.

My pronouncing it a case of tertiary syphilis surprised the very excellent physician who came with him, and who failed to recognize the nature of the complaint only because he had not been accustomed to seeing cases of the kind. The disease was of eighteen years standing, — being the lingering constitutional result of a case of *gonorrhœa* (and I have seen several such results of gonorrhœa, whatever Ricord may say to the contrary), contracted in a single lapse from virtue in early manhood.

The treatment was almost identical with that in CASE I., except that tonics, — particularly some of the preparations of iron, — were required to bring up the strength. The iodide of potassium showed its usual specific power, and I had the pleasure to send the patient home in a tolerably good state of health.

Case III. — One of the worst cases I have ever treated was presented in the person of Mr. ——, who came from a considerable distance to consult me in reference to a badly ulcerated throat, for which all tried remedies had proved useless. The first glance at the throat, showed the ulceration to be syphilitic. The uvula and the entire palatine arch were gone; the ulceration had gone deep into the pharynx. These two circumstances made swallowing extremely difficult; indeed, nothing could be swallowed, except the most bland liquids, and death by starvation was near at hand.

No time was to be lost. I put the patient upon large doses of

iodide of potassium, with compound infusion of gentian and fluid extract of sarsaparilla, and showered the throat every other day with a weak solution of acid nitrate of mercury (226), and in ten days, tender beef steak was chewed and swallowed with comfort.

This patient stayed in Boston six weeks, and went home with ten pounds more flesh than he brought with him; and by using the above remedies six months, has regained excellent health. PLATE VI., Fig. 2, is a representation of this throat as it appeared when it came under treatment.

Fortunately, these cases, terribly destructive as they are, are almost always curable, if properly managed.

Clap.—*Gonorrhœa.*—*Blenorrhagia.*

THE reader is aware that the nose, mouth, and lungs, are lined with a mucous membrane, which is liable to become inflamed from various causes. This inflammation we call a cold or catarrh. During its continuance, mucus, and other matters of different color and degrees of consistency, are more or less freely discharged.

The mucous membrane of the private parts of both sexes, is just like that of the mouth and throat, and subject to similar inflammations and discharges. But these inflammations of the private parts, instead of being produced by changes of weather, etc., generally result from the application of the specific poison of gonorrhœa. When a woman abandons herself to unlimited intercourse with different men, the private parts become stimulated to so unnatural an extent, that the secretions of the parts, which are largely augmented, at length become altered in their nature, acrid, and finally poisonous,—*so* acrid and poisonous that they cause inflammation of the parts, and when applied to the male organ, in the sexual act, they poison and inflame that.

This is the shortest and plainest explanation I can give of clap. From this explanation, one may learn why a man will sometimes take a disease from a woman who has never had any evidences of being diseased herself. If she have indulged her sexual propensities unreasonably, though not enough to produce inflammation upon herself, her secretions may yet have become acrid enough to poison one whose organs are delicate and sensitive. And more than this. The secretions of a female may become acrid and poisonous from other causes than excessive venery. The discharges in bad cases of whites will sometimes irritate and inflame the male organ, and induce a disease which has every appearance of gonorrhœa. A husband, in great distress of mind, sometimes submits a case of this sort to the physician's inspection, and lays upon him the delicate and responsible duty of deciding whether the wife has been unfaithful. No act in a whole professional life can be more momentous than a decision of this sort. If a man be well skilled in his art, he may give an answer in such case, which shall dispel the most terrible apprehensions, and save the peace of a loving family.

The poison when applied by a diseased person to the male or

female organs, requires a certain time to produce its peculiar effect,— generally from three to eight days.

Symptoms. — The first *symptom* of the disease is uneasiness in the end of the penis, accompanied, generally, with a little redness, and difficulty in passing water. The color of the first discharge may be white or straw-colored. There is tenderness where the parts are red. Scalding in passing water is sometimes, not always, present at first.

This is the beginning, or first stage of clap. Now is the time to cure it easily. But, unfortunately, the physician seldom sees a case in this early stage. Before he is allowed to inspect it, the second stage has generally appeared, which is known by violent scalding when water is passed, by chordee, or painful erections of the penis, and by an increased discharge of greenish matter often tinged with blood, and coming from much farther down the urethra, or water-passage. The matter sometimes comes from as far down as opposite the scrotum, or bag which holds the testicles. There is more or less pain in the loins and back. The whole body of the penis may become affected, and abscesses form.

A third and more terrible stage of the disease begins when the inflammation has reached the lowest part of the water-passage, just where it enters the bladder. Around this part of the passage, and lying upon the bladder, is a gland in size and shape like the largest chestnut. It is called the *prostate gland.* On either side of it, lie the receptacles of the semen, each of which sends its duct into the water-passage. When the inflammation extends through this gland, it irritates the neck of the bladder, and causes a distressing desire to pass water; and from its proximity to the larger bowel, it sends its irritation thither likewise, and impels a terrible effort to evacuate the the bowels, called tenesmus. It is the same awful feeling experienced in dysentery. Few things can be more terrible than these two distressing feelings conjoined, — the desire to pass water and to empty the bowels. Racked with terrible pains, and awful tenesmic distresses, and often with painful erections, the patient passes back and forth between the bed and stool, — often vowing, in the sincerity of his heart, that if he can but recover from this, he will never be caught again. The enlargement of this prostate gland may become chronic and permanent, and be the affliction of a man's life.

Stricture. — One of the most troublesome and persistent consequences of gonorrhœa is a partial closing up of the water-pipe, attended generally by quite a serious obstruction to the passage of the water. It is called *stricture.* The mucous membrane which lines this passage, being long inflamed, becomes thickened and less pliable or elastic. The tissues which lie underneath this membrane, also become swollen and hardened, and, pressing upon the water-passage, lessen it still further, — making the stricture more difficult of cure.

In stricture, the stream of urine is altered in size, length, and force. Its course is changed, when the stricture is lateral. The stream is often flattened, like the blade of a pen-knife, or twisted like a gimlet, or forked, — one stream reaching beyond the other. In consequence

of obstruction, the bladder is not entirely emptied, and the desire to urinate immediately returns, and is very urgent.

Gleet. — Another very troublesome result of gonorrhœa is *gleet*, — a thin, colorless discharge, which persists, in a chronic form, after all active inflammation has subsided. It is very annoying, and very obstinate. It is often dependent on the altered condition of the mucous membrane occasioned by stricture.

Orchitis. — Another very severe result of clap is swelling of the testicles, called *orchitis*. It begins frequently with chills and fever, with a feeling of weight in the scrotum, and pains in the loins. The swelling rapidly increases, and reaches its height in from three to five days.

Beside the above, there are still other mischiefs, which follow this disease, such as inflammation of the prostate gland, already described, of the bladder, and of the kidneys.

In the female, gonorrhœal inflammation affects the external genitals called the vulva, the water-pipe, the vagina, and the neck of the womb.

There is a difference of opinion as to whether gonorrhœa ever produces secondary or constitutional symptoms. Ricord, the great French authority on this subject, affirms, and with him a great number of followers, including most of the profession in this country, that constitutional symptoms never follow clap; that they never result from anything but a *syphilitic ulcer*. Vidal, a French authority, safer, in my judgment, than Ricord, though not as renowned, says, on the contrary, that secondary and tertiary complaints do follow virulent gonorrhœa. Wilson, the highest English authority, and many others, agree with him. Unprejudiced observers feel well convinced that this latter opinion is right. I have myself seen not less than half a dozen cases of secondary and tertiary syphilis, which were preceded by gonorrhœa, and nothing more. Case I. was of this kind.

Treatment. — In the first stage of the disease, there are two methods of treatment, either of which may be adopted with success. The first, which has many advocates, is the local treatment. An injection, with a glass syringe, is immediately made, of a solution of nitrate of silver, of the strength of five to ten grains to the ounce of water. It should be retained from one to five minutes, by pressing the head of the penis between the thumb and finger. If done before the third day, this will generally cure the disease.

The physician should have entire control of the patient, and compel him, if possible, to keep his room, and live for a few days on crackers and water, or something equally simple. All meats and stimulating drinks are to be excluded.

The other mode of treatment, which is perhaps the more commonly adopted, is more general in its nature. It embraces the use of warm baths, warm sweating drinks, and rest. If the patient is full of blood, and strong, from five to fifteen leeches are applied to the space between the scrotum and fundament. These things, with a low diet,

will frequently reduce the disease in a few days. If the discharge should continue, after a fair trial of the above, then copaiba and cubebs (272) are to be used. Several articles are added in the above prescription, to make the copaiba acceptable to the stomach. This preparation can be taken by most persons, and generally produces very gratifying results. Vidal strongly recommends an electuary, or thick paste (273), of which a piece twice as large as a nutmeg is to be taken in the course of the day. The prescriptions which contain copaiba and cubebs are numerous; but the above two are as good as a hundred. With these articles, the baths, the leeches, and the repose, are to be united.

Vidal says he never resorts to injections first, but employs the anti-inflammatory course first. If that fail, then he uses the injection (207), three or four times a day; and if he employs the nitrate of silver at all, it is only as an astringent (208). Prescription (304) is a valuable injection.

When the second stage sets in, and the symptoms become more violent, injections must not be used. For the very severe scalding in passing water, which is now felt, take thirty drops of a solution of potassa in half a tumblerful of water, twice or three times a day. Persons of full habit, may be benefited by dissolving a grain or two of tartar emetic in a tumbler of water, and taking to the extent of producing a little nausea. Relief is occasionally obtained by holding the penis for some time in warm water.

For the painful chordee, or erections, camphor and opium (120) are required, — from one to three pills a day. Thirty drops of laudanum may be given when the patient retires. Cold applications to the genital organs, or walking barefooted upon the cold floor, will frequently give relief. When other things fail, three pills a day may be taken of extract of hyoscyamus, containing from one to four grains each. The quantity of drinks must be diminished, and cold lotions must be applied to the penis on going to bed, — the patient covering himself lightly.

Gleet is generally very obstinate, and often requires a very protracted treatment. If there be any tenderness along the under side of the penis, it is well to apply three or four leeches. Occasionally recipe (272) will have an excellent effect. But gleet is an unhealthy action, sustained by habit, and may often be cured by simply exciting a new action which shall break the old habit. It is always well, therefore, to resort to injections. Sugar of lead and sulphate of zinc (207) answer a good purpose; or sulphate of zinc and tannin (209) may be tried. Chloride of zinc (210) does well in some obstinate cases.

But gleet is often dependent on *stricture*, and when this is the case, we must learn the location of it by exploring the water-pipe with a bongie. When the instrument reaches the constricted part, the patient feels pain, or the surgeon meets an obstruction, — often both. When the stricture is found, it is either to have the solid nitrate of silver applied to it with an instrument called the *porte caustique*, or a

solution of nitrate of silver (211), or of acid nitrate of mercury (226), with a shower syringe which I have had prepared for the purpose. When these means fail, we must pass a small bongie gently through the stricture; then a larger, and then a still larger one, until the obstruction be removed. They should be used once or twice a day, and not be retained long in the passage. They frequently have to be used ten or twelve weeks, and should not be discontinued till the cure is complete. Put no confidence in those quacks who promise to cure these old troubles in a few days. They want your money, but have no expectation or ability to cure you at all.

For inflammation of the testicles, apply leeches at once. To this should be added warm fomentations, and poultices. If these means fail, more serious measures are to be adopted, which it would be out of place to describe in this book.

Inflammation of the prostate gland is also to be treated with leeches and poultices, — likewise a warm hip-bath. The water must be drawn off with a catheter until it can be passed in the natural way.

Prevention of Sexual Diseases. — I have several times been in doubt as to the best method of presenting some of the topics which the wide scope of this book has brought before me; but no one subject has perplexed me like the one announced in the above heading, — not that it is not easy enough to furnish the rules for preventing venereal disease, but that it is a grave question in morals whether to instruct the world in the methods of such prevention is right. Is it proper to give any other advice than the simple direction to abstain from all liability to disease? That is the question.

If such advice would be heeded, of course no other should be given. But it would not. If the person disregarding it would alone suffer the penalty of the trangression, it might then be best to embody the whole advice in the simple imperative word, *abstain!* But this cannot be. The infection will be imparted to a third person, and onward to thousands; and many of these thousands will be innocent wives, who will perish of the disease, or send the infection down to the second, the third, the fourth, and to all generations! While a strict morality might seem, therefore, at first view, to forbid the inculcation of rules for avoiding infection, the good of the race would appear to justify and require it.

The first requisite for prevention is cleanliness. Frequent washing is of prime importance.

The precautions should not be the same before and after the venereal act, when a person is about to expose himself to risk. Before the act, the parts should be carefully examined, to see if there be any break in the skin. The least breach in this covering of the penis greatly promotes contagion. Before coition, there should be no washing with soap, for this deprives the parts of the mucus and oil, — thus rendering the naked and exposed skin liable to infection. On the contrary, to apply a solution of alum, tannin, or a decoction of oak bark, or aromatic wine, constringes or hardens the covering of the

organ, and renders contagion more difficult. An article called condom is often used to ward off disease. It is a sack made of gold beater's skin, and is drawn over the penis like a glove over the finger, and thus protects it from contact with poisonous matter.

Of still greater importance are prompt measures of prevention *after the act.* Lotions should be immediately applied to every part of the organ, and in the case of females, should be used as injections. These lotions should be acids or alkalies. A mixture of vinegar and water has been recommended as an excellent wash. Record recommends aromatic wine; Malapert, corrosive sublimate (212), in the form of solution. Probably the best preventive is composed mainly of alcohol and soap (213), as recommended by Langlebert.

An exposed person, using any one of these solutions, particularly the last, or, in the absence of all these, washing thoroughly with soap and water, will be likely to escape contagion.

Medical Police.— What is called general prophylaxis, or prevention, or medical police, is not a subject of legislation in this country. The moral sense of the American people does not admit its necessity. In Europe, the authorities watch over prostitution. They even go so far as to regulate it. They appoint practitioners, whose duty it is to act as a sort of medical police, and particularly to visit houses of prostitution once or twice a week, and examine all the inmates. When a girl is found diseased, she is immediately removed to a hospital, and not permitted to return until she is well.

Self-Pollution.— *Masturbation.— Onanism.*

There is probably no vice to which so many boys and young men, and even girls and young women, are addicted, and from which so many constitutions break down, as self-pollution. Small boys and girls learn the vile practice of the larger ones at school, and generally continue it up to maturity, without the least suspicion that they are inflicting upon themselves either a moral or a physical injury.

This comes of the false modesty and bastard morality which withholds from the young all knowledge of the proper functions of their sexual organs, and of the inconceivable mischief resulting from their abuse. A gentleman of distinction lately said to me: "I instruct my boys as faithfully on this subject as upon any other moral or physical question, and I tell my wife it is her duty to do the same with the girls." This is wise. Yet, how few parents ever speak to their boys or girls on the subject, or give them the least reason to suppose there is any better rule for their conduct than their own desires!

Symptoms.— These are very numerous. The principal are, headache, wakefulness, restless nights, indolence, indisposition to study, melancholy, despondency, forgetfulness, weakness in the back and private organs, a lack of confidence in one's own abilities, cowardice, inability to look another full in the face, and, among females, hysterics, whites, and a desire for seclusion from society and solitude.

I have already spoken of the receptacles of semen, lying on each side of the prostate gland. From the fore part of these receptacles, the semen passes through two ducts, about a finger's breadth in length, into the urethra or water-pipe, just in front of the prostate. From excessive self-pollution, these ducts become very irritable, and also debilitated and relaxed, — so much so that they will not retain the semen; and during lascivious dreams, it flows off. These seminal losses are called "nocturnal emissions." So constant is the drain they keep up upon many young men who have abused themselves excessively, that the whole man, mentally, morally, and physically, becomes a wreck. There are few objects more pitiable to behold than a young man in this condition, — his nervous system feeble, tremulous, and broken; his memory weakened and fading out; his eye unsteady and incapable of looking a friend in the face; his loins and back weakened, giving him the feeble gait of old age; his once erect form cowed and bent; his high sense of manliness all oozed out of him; his mind taking up and dropping the simplest threads of thought, losing its way in the plainest paths of reflection, and often starting back affrighted at the glimpse of chaotic insanity opening before him, — turning here and there for relief, but finding little hope of recovery, except in marriage, and yet knowing himself unfitted to be the husband of an intelligent woman!

Treatment. — Every kind of treatment, no matter how judicious or well applied, will be unsuccessful, unless the vice which has produced the disease be absolutely and entirely abandoned. This is the first thing to be secured. It may be extremely difficult for the patient to do this, with his mental and moral nature all broken and in ruins, — with no heart to feel, and will to execute; and yet it must be done, or a cure cannot be effected.

To bring this about, everything must be done by the physician to strengthen the moral nature of the patient, and to raise his self-respect and hope. The most careful directions must be given for restraining the imagination. The patient must be directed and encouraged to drive out from the mind, instantly, and upon all occasions, every lascivious thought; to cultivate the society of the most intellectual and virtuous females; to make himself *busy* with useful and, if possible, *agreeable* employment; to avoid solitude; and to sleep with some friend. He should sleep on a mattress, and never on feathers.

Where there is considerable debility, tonics will be required, as the mineral acids (60) (62) (78), and bitters (77) (67) (66) (59), and strychnine (83) (95) (85), and iron (80) (93) (72) (73) (71). In addition to some of the above preparations, the syrup of the hypophosphites should be taken for some time.

The food should be nutritious and easy of digestion, and the cold alkaline sponge bath should be taken once a day, with brisk rubbing; and the private parts should particularly be washed daily with cold water.

In conclusion, I say emphatically to parents, do not let your sons

and daughters remain ignorant on this subject. It is plainly your duty to enlighten and to warn them. It is a matter in which young persons are generally disposed to do right, if rightly instructed. Avail yourself of your right to give counsel, and, if need be, to use authority.

FEMALE DISEASES.

In addition to the diseases common to both sexes, women are subject to a class of distressing complaints peculiar to themselves, and denominated, in general terms, female diseases. Involving considerations of a delicate nature, these complaints have too generally and too long been shut out from works intended for popular distribution. Hence there is a general ignorance of a class of diseases which are fast unfitting woman for the high duty of continuing the race; and the subjects of these maladies are generally themselves so uninformed of the true nature of their sufferings, that they are neither prepared to seek relief in the proper direction, or to submit to the remedy, if it chance to be proposed.

It is intended here to speak of these disorders, as I have done of all others, in a plain and simple way, to describe them, so far as the present state of medicine permits, just as they are, and to make known the only modes of treatment which have been found available for their cure. The sufferings of woman require this; the interests of humanity require it; and the writer is impelled to it, as he thinks, by a just sense of responsibility.

Physicians, in my judgment, are chargeable with a great wrong in concealing within their own breasts information upon what are called delicate subjects, — information which the good of the world requires should be divulged, and which they ought to pour into the public mind, and make common, and which they would thus popularize, but for their stiff pride and conservatism.

The idea that our knowledge cannot be imparted to the world without injuring the public morals, is simply absurd. We are more afraid of bringing the common people too near to us, of letting down our dignity, and of opening our profound secrects to popular eyes. The result is as it should be, that unsophisticated people are apt to give physicians a wide berth, and to have nothing to do with them, unless necessity compels. Let doctors strip off their reserve, and while they remain gentlemen, become likewise companions, imparting their knowledge freely and familiarly to all, and the public confidence, now considerably shaken, will be frankly restored to the profession.

It should be the object of a good physician to know all he can, and to impart his knowledge to as many as possible. Knowledge is not

merely power; it is happiness, it is wisdom, it is health, it is virtue; yes, it is always virtue, except in some rare instances, where the worst natures pervert it. No physicians are so much loved as those who are frank, and have no concealments. The day for mysterious nods of the head, and rollings of the eyes, and shrugs of the shoulder, has gone by. Men, and women too, (or those of them who are wise), wish to know distinctly what their diseases are, and what is necessary, not to palliate and prolong, but to cure them.

Time when Female Diseases Begin. — Female complaints begin to make their appearance at the period of life called puberty, — the time when the girl passes from childhood to womanhood. This is the period when *menstruation* is established, which consists of a discharge from the genital organs, composed of blood and mucus, and which occurs, when regular, every four weeks. Up to this period, the system of reproduction has remained dormant. By the intervention of this mysterious function, the young female becomes a new being. The heart unfolds itself to new emotions; the mind assumes a solidity before unknown, and even the body acquires beauty from a sudden rotundity of form.

This is the period when the great question of female health is very apt to be settled once for all, and for life. The girl who is well trained at this time, generally has a foundation laid for health and character, which is worth more to her than riches. At no time does the mother need so much wisdom and knowledge as now. To establish the health and develop the affections of the daughter at this critical period, is a sacred trust which she can devolve upon no other being; nor can she meet her responsibilities at this time, unless better informed than most mothers are. The general apathy in regard to this maternal duty is deplorable.

False Delicacy. — The refined delicacy which withdraws these subjects from the public gaze, is commendable, for it casts a beautiful charm over society; but when carried so far as to spread a veil even over the eyes of mothers, it is quite unnatural, and leads to the worst results; for in the bad management of girls at this critical period is laid the foundation of many of the diseases which shatter the constitution of so many women. For this bad management, it is not mothers alone who are to be blamed. The neglect of the medical profession to furnish the necessary information should come in for its full share of reproach.

The Establishment of the Menses. — Nature always comes slowly and by degrees to the inauguration or establishment of any of her great functions. It is so in regard to menstruation, or, as it is variously called, "the menses," "the courses," "the change," "the flowers," "nature," etc. For some time before the flow begins, there are certain symptoms, or premonitions, which, to the eye of the physician, plainly enough foretell the impending change. To the mother these signs would be equally intelligible, were she as well informed as she should be. It is plainly her duty to be intelligent enough to assist

nature in the establishment of this important function. But how often, either from ignorance, or from false ideas of delicacy, does she fail to interfere, and allow the daughter to be taken by surprise, and perhaps frightened and thrown into convulsions!

From inquiries made of about one thousand women, a distinguished English physician found that about one quarter were unprepared for the appearance of the menses. Some of the girls were frightened and went into hysterical fits; others thought they were wounded, and washed with cold water. The flow was stopped in several cases; and in some, never restored; while the health of all in whom it was interrupted, was seriously impaired.

Symptoms of the First Menstruation. — A variety of symptoms precede and foretell the first menstruation. Headache, dizziness, sluggishness of thought, and disposition to sleep; — these, occurring in a girl, may be taken as hints that the "change" is at hand. If to these be added pains in the back and lower limbs, the intimations will be still more significant.

At this time a girl loses a relish for the society of children; she is apt to acquire a taste for solitude; her temper becomes wayward and fretful; her eyes acquire a peculiar lustre; she becomes a sort of mystery to her friends and herself, — not her physical frame only; her whole character is changed. She is about stepping into a new life. Her emotions, thoughts, anticipations, retrospections, are all new to her, and her outward manifestations are new to her friends. An intelligent mother will not fail now to prepare her mind for the important event close at hand.

The age at which this change takes place, depends very much upon a variety of circumstances. It occurs much earlier in warm than in cold climates. It is hastened by high living; by the whirl, and bustle, and excitement of city life; by reading novels which are full of love incidents; by attending balls, theatres, and parties; and by mingling much in the society of gentlemen.

Early Menstruation not Desirable. — It is a law both in animal and vegetable life, that the later the period at which maturity is reached, the greater the solidity of the body, and the longer it lives. Girls who menstruate early, do so because the body is weakened by climate or luxury, and the nervous system unduly developed by excitement; while those who come late to womanhood, have firmer constitutions, enjoy better health, and live longer. Those mothers, therefore, commit great errors, who are anxious and administer "forcing medicines," because their daughters do not menstruate at fourteen or fifteen. If girls are suffering from no special ill health, no anxiety need be felt if "the custom of women" do not come to them till the age of eighteen, or even twenty. The delay should excite thankfulness rather than regret. It shows that the constitution has not in it the seeds of early dissolution; that it is fortifying itself against future disease.

Girls who come thus tardily to maturity, are much more "regular" in after life. They bear children with fewer accidents, and are af-

flicted much less with female diseases. The duty of mothers is plain; it is to bring their daughters forward as late as possible, by refusing their early admission to society, by withdrawing from them all exciting reading, by prohibiting their early attendance at concerts and theatrical entertainments, by prescribing for them the most unstimulating diet, and by requiring a large amount of exercise in the open air.

A wide investigation has shown that the first menstruation occurs, in hot climates, at the average age of thirteen years and nineteen hundredths; in temperate regions, at fourteen years and seventy-four hundredths; in cold latitudes, at sixteen years and fifty-three hundredths. Under the hot-house culture of modern society, and especially among the wealthy classes, where indolence, luxury, and excitement, unite to weaken the constitution, this change is constantly occurring at a more tender age.

How Female Diseases are Induced. — All living things have their origin in *germs*. The germ from which the higher animals spring, man included, is an *ovum*, or *egg*. Every animal and every vegetable is provided with an organ for the production of germs. In woman, this organ is called *ovary*. There are two ovaries, about half an inch in length, — one lying on each side of the womb, to which they are attached by ligaments, or cords. The ovarian bodies contain vast numbers of vesicles, or cells, or eggs, which are the true germs of human life, and the only sources from which it can spring.

Between the ages of fourteen and forty-five (speaking in general terms), every healthy woman matures and deposits an ovum once in twenty-eight days. This vesicle, some time before the monthly flow, begins to germinate and swell, and after a time, like a grain of wheat in the earth, it bursts its covering, and springs forth. It then passes through what is called the fallopian tube into the womb, whence it is cast off.

During the swelling and bursting of this vesicle or germ, the vessels of the ovaries, and womb, and, particularly, of the membrane lining the womb and its neck, are so crowded with blood as to produce in the parts a state of congestion. If the parts be examined with a speculum at this time, they will be found red, sensitive, and almost inflamed. So great is this congestion, that the woman often complains of pain in the ovaries and the womb, — and a general sense of heat, aching, and dragging down in the lower part of the bowels. The pain often extends to the back, the groins, and the thighs.

This Condition Repeated Every Month. — When we consider that this state of things is repeated every four weeks, and that the congested or crowded state of the vessels begins some days before the monthly flow, and lasts, in all, some ten days, making about one third part of every month, we need not wonder that inflammation so often supervenes, with all its attendant ill health and sufferings.

Increased by Various Causes. — If we reflect, further, that this con-

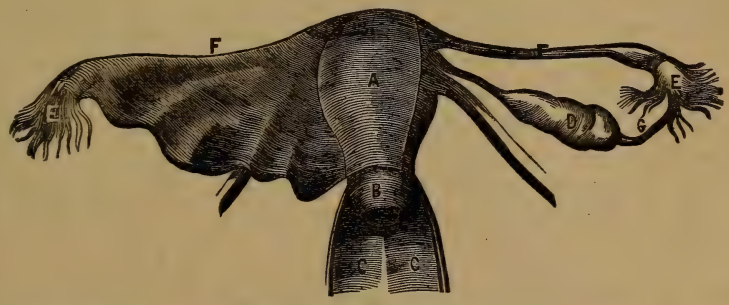
gestion is increased, among the wealthy, by high living, and among all classes, by over-stimulation of the nervous system, and by the lascivious morals of the age, we see stronger reasons for expecting, — what is really occurring, — a continually increasing amount of suffering from female diseases.

And when we know, still further, that American females are careless of their health; that they often attend balls and theatres at the very time of suffering from this monthly affliction; that they frequently wet their feet, and otherwise expose themselves to colds, we cannot feel surprise, even when we learn that from one-half to three-fourths of all women in cities, and quite a large proportion of them in the country, have inflammation of the ovaries, or of the womb, or of the neck of the womb, or suffer some of the forms of displacement of this latter organ.

Child Bearing. — The inflammatory state of the uterine organs is often induced by injuries received in child-bearing, and by excessive indulgence in sexual pleasures.

Weakness of the Sexual System. — The womb, moreover, like any other organ, may be naturally frail, and easily affected by disease. This weakness of the sexual system is indicated by the difficulty with which menstruation is established, and the presence of the whites, both before and after each monthly flow. Women in whom the generative organs are weak, are much more liable to inflammation of the womb, and to all the complaints peculiar to the sex.

Fig. 134.



Description of the Sexual Organs. — Before describing the particular diseases to which the female generative organs are liable, it is proper to give the reader a brief description of the chief of these organs.

The Womb itself, in its healthy, natural state, is about two inches long, and one inch broad, — weighing a little more than an ounce; and is in shape like a pear. It is lined with a mere rudimentary mucous membrane.

The Neck of the Womb has a cavity distinct from that of the body of the organ, and is lined with a mucous membrane well supplied with follicles or glands.

The Fallopian Tubes open, one from each side of the base, or largest end of the womb, and extend outward to the ovaries.

The Ovaries are a bundle of eggs lying one on each side of the base of the womb. They are more particularly explained elsewhere.

Fig. 134 gives some idea of these organs. A, is the body of the womb; B, the neck of the womb; C, C, the vagina; D, one of the ovaries; F, F, the fallopian tubes; E, E, the fimbriated extremities; G, the small ligament attaching the fimbriated extremity to the ovary.

Inflammation of the Neck of the Womb. — Inflammation of the body of the womb is a comparatively rare disease, but inflammation of the *neck* of this organ is so common that in nearly nineteen out of twenty cases, when females seek relief for whites, for painful menstruation, for stoppage of the menses, or even for what they suppose to be falling of the womb, a careful examination will show that this pendent portion of the womb is in a state of marked inflammation, or of absolute ulceration. The whites, if they continue, without intermission, from one menstrual flow to another, are almost always the result of one of these conditions of the uterine neck.

It would surprise most persons, out of the medical profession, and many physicians, to know how large a proportion of the more grave diseases which inflict such terrible suffering upon woman, and so completely shatter her constitution, are dependent for their existence upon a simple local inflammation, either in the neck of the uterus, or in one or both of the ovaries. Many a female has for years suffered agonies greater than those of death itself, arising, as she supposed, from a complication of ills which invade every part of the system, while the whole of her troubles arose, in fact, from an inflamed spot which could be covered by the ball of the finger.

Difficulties of Studying Uterine Diseases. — The facts stated above have been but a short time known to medical men; and to large numbers of the profession, are still unknown. The reason is, that very serious obstacles have stood in the way of studying the diseases of women.

The social relations of the sexes, and the great delicacy of the matters to be investigated, were long the cause of inquiries and examinations so indirect that little knowledge was gained, and as little benefit conferred.

Woman, always distinguished for her modesty, could not be expected to invite investigations which were not proffered, whatever the extremity of her sufferings; and man, scrupulously sensitive lest he should make himself an intruder by stepping within delicate inclosures, have both, in times past, mistaken their duty by misinterpreting the demands of the highest delicacy.

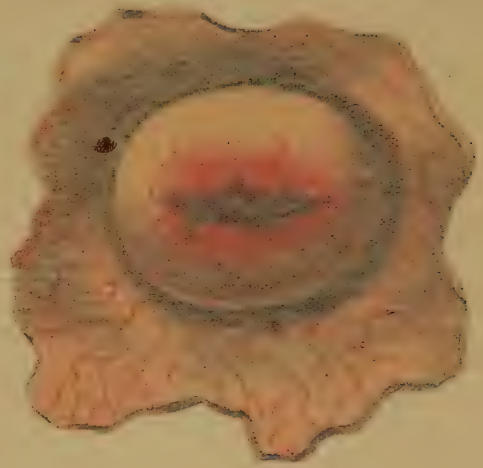
Needful Examinations not Indelicate. — Rightly viewed, no inquiries or examinations are indelicate which are necessary to a full understanding of the nature of disease, and which are made with the

Fig.1.

Fig.2.

Fig.3.

Fig.4.



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It would surprise most persons, out of the medical profession, and many physicians, to know how large a proportion of the long-standing diseases which inflict such terrible suffering upon women, and so completely shatter her constitution, are dependent for their existence upon a simple local inflammation, either in the neck of the uterus, or in one or both of the ovaries. Many a female has for years suffered agonies greater than those of death itself, arising, as she supposed, from a complication of ills which invade every part of the system, while the whole of her troubles arose, in fact, from an inflamed spot which could be covered by the ball of the finger.

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Fig. 2.

Fig. 3.

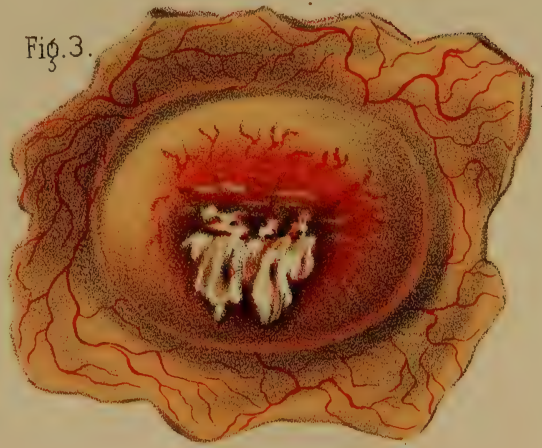
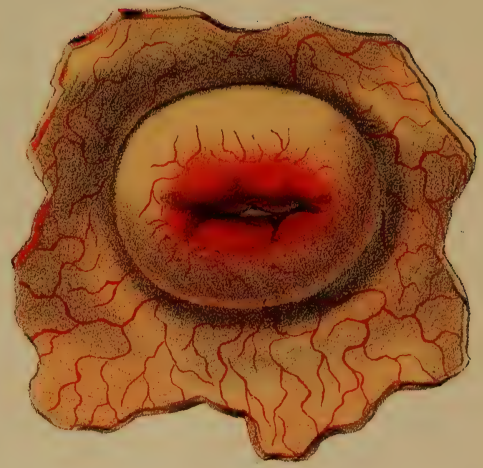


Fig. 4.



sole purpose of rendering its cure possible. I agree with Dr. Meigs, the elder, that the delicacy or indelicacy of examining the persons of females for the purpose of exploring disease, depends on the motive with which it is done. To pure-minded persons, it is never, I think, a source of impurity. On the contrary, the self-restraint, the honorable feeling, and the nice sense of delicacy which it calls into exercise, often heighten the tone of a man's virtue, and certainly increase a true woman's respect for it. Unfortunately there is now and then a gross-minded man in the profession, who, in these investigations, will violate the most sacred of all trusts committed to his hands; but such monsters, — few in number, — soon find their level, and are shunned as the most vile of the race.

It is now so well understood that these investigations do not lead to immoralities, that the most highly educated, intelligent, refined, and virtuous females, almost invariably raise the fewest objections to such examinations as a physician of character may propose.

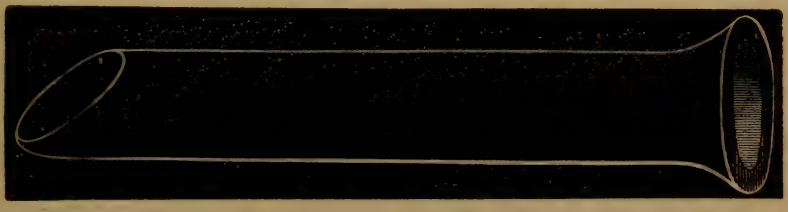
Methods of Investigating Female Diseases. — The symptoms of these complaints will be spoken of in their proper place, as the several diseases come under a brief review. I merely wish to allude here to the methods of physical exploration which modern practice has called to its aid.

The Touch. — These methods consist, first, of what is called the *touch*, which is made either externally upon the bowels, or internally, with the index finger, through the vagina, or passage from the external genital organs to the neck of the womb.

The Speculum. — In the second place, of ocular inspection of the vagina and neck of the uterus, through an instrument called the *speculum*. By this instrument, the eye, as well as the finger, is made to assist in learning the real condition of the parts.

The finger informs us whether there is any deviation from nature in the bulk, the firmness, the smoothness, or the sensibility of the parts; while the *sight*, through the speculum, affords absolute certainty as to whether the parts are suffering from inflammation, ulceration, abrasion, or eruption. The following is the best form of speculum yet used.

FIG. 135



The end is so shaped as to catch the neck of the womb, and then by drawing the instrument forward slightly, the diseased surface is presented for as perfect inspection as if located externally.

Inflammation, Ulceration, and Enlargement of the Neck of the Womb.

Inflammation of the neck of the uterus is very common; ulceration and permanent enlargement (technically called hypertrophy), are its results, when it is not arrested in due time. These affections, in fact, and the same troubles as they affect the ovaries, make up the bulk of female diseases, — being the real causes of the most of those symptoms which have passed under the name of whites, suppression, painful menstruation, sterility, general debility, etc.

The neck of the womb, when healthy, is soft and smooth. No hardness or condensation of tissue can be felt by the finger, on pressing over it. It is elastic, too, and feels unctuous to the touch. This latter sensation is communicated by the layer of mucus which covers it. Pressure upon it produces no pain. Plate VII., Fig. 1, is a fine specimen of the size, shape, color, and appearance of a healthy womb.

Inflammation, when found in this part, may begin in the mucous membrane which covers the neck, or in that which lines its cavity, or in the small glands in the body of the organ.

Symptoms. — Inflammation of the mucous membrane covering the neck of the uterus, destroys the unctuous feel which it has in health. It also causes the neck to swell, its vessels being crowded full of blood. If the body of the organ, as well as the surface, be reached by the inflammation, it will be hardened, as well as enlarged; and in consequence of its increased weight, it is apt to drop down somewhat into the cavity of the vagina. In married ladies, it is often, by physical pressure, pushed a little backward, or retroverted. Examination with the speculum, shows the inflamed neck to be of a vivid red, instead of a pale rose-color. It may be covered with red or white pimples, which are glands enlarged with muco-pus.

In the healthy state, the mouth of the womb is so much closed as to be just perceptible when the finger passes over it. Inflammation causes it to be more or less open, and its lips to be parted.

Inflammation Followed by Ulceration. — In a majority of cases, inflammation of the neck of the womb and of its cavity, is soon followed by ulceration, which generally appears first around the mouth, and just within the cavity of the neck. From thence it spreads both inward and outward. Plate VII., Fig. 3, furnishes a good specimen.

Various Degrees of Ulceration, etc. — Of course these inflammations and ulcerations mix and run into each other in all possible forms, — presenting excoriations, or raw places; granulations, or pimply surfaces; and indurations, or hardened parts. Sometimes these pimply patches will be red and hard, and again the whole surface will be spongy, and will bleed upon the slightest touch.

In many cases, these ulcerations make wretched work with the

mouth of the womb, eating deeply into the cavity, and giving it a ragged and unsightly appearance. PLATE VII., Fig. 4, may be taken as a sample.

Velvety Feel from Ulceration. — Ulceration generally gives to the surface on which it exists, a soft, velvety feel, which the finger generally recognizes. This velvety sensation, with the open state of the mouth, are the most important evidences we can derive from the touch, of this form of disease.

The Discharge from these Ulcers is always Pus, or, in common language, *matter*. It is sometimes poured out scantily, at other times, very freely. It may be thick and yellow, or thin, and of a lighter color.

The inflammatory and ulcerated condition of the neck of the womb, often gives rise to pain ; and when the seat of the disease has not been examined, as it should be, this pain has frequently been called neuralgia. In this way, ignorance has compelled neuralgia to stand sponsor for a great many pains with which it has had nothing to do.

These Ulcers Disturb Menstruation. — Menstruation is generally changed, more or less, in its character, by the presence of inflammation or ulceration in the neck of the womb. It usually becomes more *painful*. In some cases it is made more *profuse*, in others more *scanty*. It may come on more frequently, or it may be postponed, protracted, or abridged in its continuance. There is generally pain of a dull, aching kind, low down in the back. There is often a feeling of fulness, pain, and a sense of bearing down in the lower part of the bowels ; sometimes the pain extends to the groins and thighs.

Extensive Disturbances from these Inflammations, etc. — The nerves, with which the womb is liberally supplied, belong to those of the sympathetic system. Hence, the condition of the uterus influences a wide circle of sympathies. By these nerves this organ is brought into close relationship with the organs of animal life. If the former suffer, the latter suffers also. The stomach, being intimately connected with the womb, physically, feels keenly these inflammations and ulcerations of the uterine neck. At times, the pain, debility, general disturbance, and dyspeptic state of the stomach are such as to cheat both the doctor and the patient into the belief that this organ is the seat of the disease. But in such cases, the symptoms of stomach disease will all disappear the moment the local affection is removed from the neck of the womb.

The liver, too, often participates in these troubles, and becomes sadly deranged. It is sometimes even greatly enlarged and congested, and patients frequently have the various symptoms of what are called liver complaints.

Severe pains are sometimes felt under the breast bone, and over the chest generally, making the patient apprehensive of disease of the lungs ; and indeed consumption is not a very unfrequent result of uterine diseases.

Pains are often felt in the region of the heart, which organ is often harassed with palpitations.

The flesh is apt to waste under the symptoms excited by these inflammatory and ulcerative processes in the uterine neck; and even the brain, though lying in some measure beyond the circle of influences set in motion by the organic nerves, suffers disturbance and pain.

Even the special senses of sight and hearing may be drawn into this general vortex, and both be much impaired. And to crown this catalogue of ills, it may be mentioned that those distressing things called hysterical fits, proceed from the same local disorders.

In brief, there is scarce a point in the human body to which these inflammatory and ulcerative conditions of the uterine neck may not send their sympathetic pains and aches, and where they may not in time induce real disease. This is the reason why so many women suffering from these local complaints, tell the phyiscian, when consulting him, that they are "*diseased all over.*" If asked where the complaint is located, they will answer — "*It is everywhere.*" In the most earnest manner the assurance will be given — "*Doctor, there is n't any well part about me.*"

Treatment. — It is just as unreasonable and useless to treat these inflammations and ulcerations through the stomach, as it is an inflamed or ulcerated throat. *They are local diseases, affecting a particular part, and the remedy must be local.*

Like all other affections, these can only be managed intelligently after their nature is well understood. Nothing can really be done towards a cure, until it is known what the matter is; and no competent physician will move a single step in the treatment of one of these cases, until he has made a thorough examination. He owes this to himself and to his patient, — the more so as the neck of the womb may be as easily examined as the upper part of the throat, and the local remedy may be almost as readily applied in the former case as in the latter.

If, upon the introduction of the speculum, the uterine neck be found simply inflamed and enlarged, the application of a strong solution of nitrate of silver, once in five or six days, will often prove sufficient to reduce both the inflammation and the swelling. If it should not, the solid stick should be lightly applied. If this should not succeed (though it will in most cases) then introduce a speculum, and when the neck of the womb is fairly lodged in its extremity, drop in two or three leeches and allow them to fill.

If ulceration be present, the solid nitrate of silver must be applied to the ulcer once in five days. One who is not accustomed to treat these affections in this simple way, will at first be surprised at the rapidity with which the local trouble will disappear, and with it, the thousand and one aches and pains which torment the whole body. As the terrible pains in the whole face and head, which are produced by a single tooth, all instantly come to an end when the tooth is extracted, so do the bad feelings all over the body subside as fast as the local

ailments of the uterine neck are cured. There is no exception to this rule, except where the sympathetic affection has become fixed by long neglect of the primary uterine disease. It is, therefore, surprising that so many excellent women, whose lives are of the greatest value to themselves and friends, should be permitted to perish of these ailments, when the cure is so simple, and many times so entirely within the reach of the most ordinary skill. It is a reproach to the profession which should be wiped away.

If there are a hundred motives for gaining the mastery over other diseases, there are a thousand for learning to control these. More than any other disease, or all others, they make the homes of men desolate, by robbing them of woman, their ornament and solace. The physician who neglects to make himself acquainted with all there is to be known of these complaints, shows himself not only unfit for his profession, but deficient in some of the prime elements which combine to make a true man.

Hardening of the Uterine Neck. — In many cases the uterine neck is not only inflamed and enlarged, it is indurated and hardened. At times, it is enlarged and hardened on one side, and not much on the other. In still other cases, there are enlarged spots, or nodes, giving the whole neck a *knotty* feel under the finger.

These hardened conditions of the uterine neck proceed from various causes, and are more difficult to cure than the ordinary inflammation, or even ulceration. They sometimes indicate cancerous disease, and then, of course, involve the most serious considerations. In many of these cases, nitrate of silver fails to produce its usual effects. We then have to resort to the acid nitrate of mercury, or, as it is often called, Bennet's Caustic. No definite rules can be given as to the extent to which this article should be reduced. It is sometimes applied very strong, and immediately neutralized by the application of water.

Uterine Syringe. — For applying the several remedies to the internal cavity of the uterine neck, I have contrived a silver syringe, which is bent a little at the extremity, and pierced with fine holes all round. With this instrument, the remedy is carried directly to the diseased part, and applied instantaneously to every side of the cavity.

Beside these local applications, it is frequently necessary to resort to soothing or astringent injections into the vagina, hip baths, and injections into the bowels, some mild physic, and rest in a horizontal position. These matters will all be judiciously regulated by the attending physician, if he is master of his business.

Case I. — Mrs. F. applied for relief from incessant bearing down, pains in the back and hips, pressure upon the top of the head, palpitation of the heart, bad appetite, the whites, and a brick-colored deposit in the urine, after standing a time.

I made an examination, and found the neck of the womb enlarged and ulcerated, as in PLATE VII., Fig. 4.

There was no doubt as to the treatment required. I applied the

solid nitrate of silver to the ulcerated surface once in five days, for three months, — at the same time, building up the health, which was much broken, by iron and other tonics (75) (63), by a generous diet, and by gentle exercise in a carriage.

The appetite and general health came back, the whites and pains all disappeared, and the patient felt, as she said, "like a new being."

Case II. — Mrs. C., the mother of two children, had suffered, since the birth of the second child, great pain low down in the back, with bearing down, and a distressing desire, a good part of the time, to pass water. She had a continual discharge from the vagina, of a cream-like matter, which very much reduced her strength. Beside these symptoms she had pains everywhere, particularly in the head.

An examination revealed that the neck of the womb was much *enlarged* and *hardened*, and badly ulcerated about the mouth. (See PLATE VII., Fig. 3.)

Once in six days, the solid nitrate of silver was applied to the ulcerated surface. This was done five times, which caused the ulcer to heal, but did not reduce the size of the neck, or diminish its hardness.

To effect these objects, I touched the whole hardened surface with acid nitrate of mercury, and immediately pressed upon the cauterized surface a sponge saturated with water. I repeated this twice, that the acid might not penetrate too deep. These operations were repeated once a week, for six weeks, — thirty-drop doses of syrup of iodide of iron being given, in the mean time, three times a day, with a vegetable bitter and mineral acid (63). At the end of this time, the hardness had given way, and the uterine neck was brought down to near its ordinary size. The other symptoms disappeared, and the patient has had no return of her sufferings.

Inflammation, etc., of the Ovaries. — *Ovaritis.*

THE inflamed condition of the ovaries is indicated by increased heat, and pain upon pressure. The pain in the ovarian region is sometimes intermittent, sometimes constant, and occasionally passes down to the loins and thighs.

There are acute and chronic inflammations of the organs; but it will be sufficiently accurate, in a work of this kind, to treat of them as essentially one.

The effects of inflammation upon the ovaries, as upon other bodies, are various, sometimes enlarging and hardening, at other times, collapsing and blasting them. This last effect, it is hardly necessary to say, cuts off all hope of bearing children.

The Causes of ovarian inflammation are numerous. One of the most important causes has already been noticed, namely, the congestion of the parts, for several days, at every menstrual period. This, amounting as it does almost to inflammation, is often intensified by other causes, such as wetting the feet, taking sudden colds, excessive fatigue from dancing, and exciting drinks.

Sexual indulgence often proves a cause of inflammation in these bodies. It is particularly apt to have this effect in the newly-married female, with whom it is a novel stimulus, and often applied with immoderate excess. In late marriages, when the stimulus to the ovaries has long been denied, its sudden presentation is liable to make an inflammatory impression. Its entire *absence*, too, in persons of strong passions, may result in ovarian disease.

This inflammation may be produced by the new state of things existing at the critical period called *the turn of life*, when it reacts on the womb, producing the floodings which often bring menstruation to a close. The congestion, too, which has been present every month for many years, does not immediately cease at this change; and not finding relief by the accustomed flow, the ovarian bodies are exposed to inflammation.

In all large cities, the pest-houses of civilization, where the women are more numerous than the men, there are many females whose virginity is a burden, and numerous others who give themselves up to sexual excesses; — to both these classes, the turn of life is very liable to promote these ovarian disorders.

There is another class of causes, which, though not so easily recognized, are equally cogent in exciting this form of disease. I mean all those excitements which arise from unbridled thoughts, from books of questionable character, from music, social intercourse, and stimulating food and drinks, — all which promote and intensify burning desires, which, though natural and proper in themselves, cannot lawfully be gratified in a community where the female sex greatly preponderates, numerically, over the male. When we consider how powerful within a woman's breast the conflict often is between the impulse of passion and the dictates of duty, and how strongly this conflict must react upon the sexual organs, and especially upon the ovaries, the centre of the sexual system, we can easily see in how many cases they may become inflamed.

Another cause of this disease is suppression of the menses. The engorged and crowded state of the vessels of the womb, of the uterine neck, and of the ovaries, not finding vent in the accustomed flow, inflammation in any one of these organs is a very natural result.

The inflammation of these ovarian bodies is a frequent result, too, of a similar condition, previously existing in the neck of the womb. In passing from the uterine neck to the ovarian bodies, the inflammatory condition often fastens itself upon the broad ligament, the fallopian tubes, and their fimbriated extremities. (See PLATE VIII., Figs. 1 and 2.) The whole, it will be seen, presents an amount of disease which it is painful to contemplate.

The womb being turned over, and pressing against one of the ovaries, may cause it to inflame by mechanical irritation. Pessaries, injudiciously used, may do the same thing.

Symptoms. — The first and most obvious symptom is a pain a little to the right or left of the womb. This pain is almost always increased by walking, riding, or by external pressure. It is especially augmented

by straightening the thigh, by which the parts over the inflammation are put upon the stretch. When standing up, ladies suffering from this disease, are generally compelled to rest the foot on a stool, so as to bend the thigh, and relax the muscles. The pains radiate from the ovaries, and go down to the loins and thighs, and sometimes to the fundament. They are of a dull, dragging, heavy nature.

Sometimes the ovarian bodies become vere much enlarged, and dropping down, somewhat, press upon the lower bowel, causing constipation, or upon the neck of the bladder, creating a frequent desire to urinate, and an inability to pass the water freely.

Treatment. — As inflammation of the ovaries is always increased during the menstrual flow, it is not proper to meddle with it at these monthly periods, lest the trouble be aggravated. Immediately after one of the turns has passed, from six to eight leeches should be applied over the diseased ovary. When the bites are healed, a blister may be used in the same place. The scarf-skin should not be removed, and the irritated surface must be healed as soon as possible. The blister should be camphorated to prevent strangulation. The part should next be rubbed for a few minutes, night and morning, with an alterative and anodyne ointment (169).

After the next menstruation, the same things should be repeated, and again after the next, and so on, for five or six months, or even longer, if need be. The already bloodless condition of the patient may require, however, that the leeches should not be applied more than once, or, at most, twice.

The bowels should occasionally be opened by some simple cathartic, for the purpose of removing all hard substances which may press against and fret the inflamed ovaries. The purgatives employed should be of the most cooling kind, such as salts or oil; while aloes, and all harsh cathartics must be avoided.

Injections of tincture of belladonna and hyoscyamus are useful for quieting neighboring parts, and warding off external disturbances. They act like soft substances thrown upon the pavement in front of a sick man's house.

The patient should be kept, as much as possible, in the recumbent position, lying upon the bed or the lounge, and should only be permitted to move about to such extent as will not irritate the inflamed parts.

Case. — Miss R. M. B. suffered a great deal of pain every month while menstruating. She had also a great tenderness upon pressure just at the left of the upper part of the womb, and at times a severe pain in the same region, which often extended down into the groin and thigh.

The left ovarium was so much enlarged that it could be distinctly felt through the walls of the bowels.

Immediately after the next monthly period, I applied six leeches over the inflamed ovarium, and when the bites were healed, put a blister over the same region. After this healed, the same space was rubbed, twice a day, with an ointment (169). Immediately after the

courses, the same thing was repeated for four months, — the patient, each time, being kept quiet for a few days, and then permitted to take gentle exercise out of doors. The diet was generally nourishing.

The patient was well at the end of four months, and has had no return of the inflammation.

This was a simple case, requiring only the most simple course of treatment; but it furnishes the general outline to be pursued in all cases of inflamed ovaries.

Whites. — *Leucorrhœa.* — *Fluor Albus.*

Leucorrhœa is from two Greek words, λεύχος and ῥεω, and fluor albus from two Latin words, albus and fluo, having precisely the same meaning as the Greek, namely, a *white discharge.* Hence, in popular language, the disease is called the "*whites;*" it is also called "*female weakness.*"

These terms are well enough, perhaps, if we have in mind that they convey to us only the idea of a *symptom* of disease. They all mean, with the exception of the last, a white discharge from the female genital organs. They are slightly inaccurate, as the discharge is sometimes yellow, or green, or otherwise variant from white. Any discharge from the female genital organs which is *not bloody*, comes under the term "whites."

A Symptom Only. — As the name of a disease, the term whites has no specific meaning. It does not designate any particular complaint. It is a symptom, just as the matter expectorated and raised in lung diseases is a symptom; and as such only should it be regarded. When persons cough and *raise* a great deal, they do not, on consulting a physician, say they have got the expectoration; but they say they fear they have some disease of the lungs, because they expectorate. They look upon the expectoration as the *sign* or symptom of disease.

So females, and physicians too, must learn to look upon the *whites*, not as a disease, but as the *sign* or symptom of disease, which sign they should become skilled in interpreting.

There is no reason why the discharge from the genital organs should not be as well interpreted as the expectoration or discharge from the throat. The parts from which it comes, may be about as easily and as well inspected.

No Female Ailments so Common. — There are no female troubles to which the attention of the physician is so often called as these annoying and debilitating symptoms called whites; and there is no department of medical practice, in which the really able, as well as conscientious and painstaking physician, is so well tested. If, regarding these discharges as they are, simply as *signs*, he searches faithfully for their cause, he will be led to a treatment which in a great majority of cases will be successful. And surely no success in life can be more prized by a right-minded physician. It procures health, the highest

earthly boon, for suffering woman, and gratitude, the most prized of all rewards, for himself.

There are Four Kinds of Discharges from the female genital organs, — mucus, pus, mucus and pus combined, and the watery. The first, mucus, does not, in itself, imply disease; but when pus is discharged, we know that inflammation exists, because such a cause alone can produce it.

Seat of the Disease. — The cause which produces the whites may have its seat either in the vagina, or in the neck of the womb; and in practice, it is of course quite important to know where its location is. The character of the discharge generally settles this point. If it be thin and watery, or thick and cream-like, it is from the vagina or passage which leads to the womb; if ropy, gluey or albuminous, like white of egg, it is from the cavity of the uterine neck.

Treatment. — Some physicians always prescribe the same remedy for the whites. They might as well have but one prescription for expectoration. The remedy must have reference to the *cause* of the discharge; until the cause be searched out, every prescription is a mere trial at guessing, — a sort of practice well enough adapted to quacks, but not becoming scientific men.

When a case of whites is brought before a physician who understands his business, he makes no prescription until he has discovered what the disease is. Having determined this point, his remedies have an intelligent bearing upon the case. This being so, I have no remedies to set down for whites, simply as such. I shall proceed, therefore, to speak of several other complaints which bear more or less upon this. **For treatment, see page 390.**

Absence of the Menses. — *Amenorrhœa.*

The absence of the menses is divided into two kinds, — *retention* and *suppression.* It is retention when the monthly flow has never appeared, — suppression, when, having been established, it is, by one cause or another, stopped.

Retention Explained. — The ovaries, as we have before said, are the centre of the female sexual system. It is the swelling or ripening of an ovum or egg, every four weeks, which causes the large flow of blood to the parts, and the consequent menstrual discharge.

But it sometimes happens that the ovaries are not developed at the usual time of life. The monthly evacuation does not then appear. There is retention. There may be retention, too, from other causes, after the ovaries are matured. Costiveness may sometimes occasion it, — so may a degenerated and low state of the blood.

There may be *mechanical* causes of retention. The mouth of the womb may be entirely closed, or the neck may be so constricted as to close the passage through it, leaving no outlet for the monthly accumulation. The hymen, also, may have no opening through it. When

these mechanical obstructions exist, there are sometimes large collections of fluid in the womb, which cause enlargement of the body, and in some instances, painful suspicions that the sufferer has committed imprudences, and is in the family way. Physicians should be on their guard against falling into such errors, and lending the sanction of their name to these blasting mistakes.

Suppression Explained. — Suppression, — a stoppage after flow has been once established, — may be caused by inflammation of the ovaries, — the blood, in this diseased condition, being drawn so entirely to these swelling and germinating bodies, that the accustomed flow from the womb does not take place.

Inflammation in the neck of the womb may also cause a stoppage. So may a fright, as from a fire occurring in the neighborhood, or a cold taken by being caught in a shower. Girls sometimes, in their utter thoughtlessness or ignorance, dip their feet in cold water, when their courses are upon them, and bring on a suppression of a most dangerous character. The most lovely and innocent girls have done this for the purpose of attending a party; and, in some instances, the stoppage induced has ended in death within a few hours. The profound ignorance of their own mechanism, and of the laws which govern it, in which girls are kept who are just budding into life, is a serious reproach both to parents and physicians.

Suppression may be induced by whatever reduces the quantity or quality of the blood, as consumption, or by great depression of spirits. With some rare exceptions, women have not their turns while in the family way.

Treatment. — Before anything can be done in the way of treatment, the case must be thoroughly investigated, and the specific cause of the disease searched out.

If it prove to be *retention*, and arises from a bloodless condition, and an undeveloped state of the ovaries, iron is the proper remedy (61) (73) (74) (75), with a generous diet and exercise out of doors. If caused by an inflammatory state of the uterine neck or ovaries, the proper treatment has been already indicated. If from costiveness, relief may generally be found from prescriptions (5) (9). The mechanical causes alluded to above, when found to exist, must be removed by gently dilating the mouth of the womb or the uterine neck, with bougies, beginning with the smallest, and increasing the size, or by puncturing the hymen, as the case may require.

In Treating Suppression, it should be borne in mind that at a certain time each month, nature makes an attempt to restore the lost function. Even when she is not successful, probably an ovum is matured and in some way disposed of. The intelligent physician will of course avail himself of this favorable moment to try his skill in bringing about the desired regularity. When this time arrives, he should order three or four leeches applied to each groin at night. The next night, he should direct the use of a pungent foot bath (242); also (16) as a cathartic.

When suppression exists, it is not always proper to try in this direct way to bring on the turns. There may be no blood to spare; and this may be the sole reason why the courses do not appear. When this is the case, nothing is to be done but to build up the health as rapidly as possible, and when this is sufficiently established, the courses will be all right.

Profuse Menstruation.—*Menorrhagia.*

Menstruation may *continue too long*, or *occur too often*, or *be too profuse* while it lasts; or all these irregularities may be experienced by the same person. Any one of them will prove a serious irritation, and a drain upon the constitution; the whole together, if not arrested, will undermine and destroy it.

The Cause of this, like the sourse of all other female diseases, is, in a great majority of cases, overlooked.

It is not to be attributed, as so many suppose, to a congested state of the womb; but is rather the result, in a great many instances, of the inflammatory or ulcerated condition of the uterine neck.

In still another large number of cases, it arises from a succession of *ovarian abortions.* When the blood has run low, and nutrition is defective, as in the consumptive habit, the ovarian vesicles fail to reach maturity. Like other products of the economy, they become blighted, and abort. And as these blights occur often, nature is busy every two or three weeks in casting them off. Hence, the menses appear often. They come and go without order, because they spring from a process which is a contraversion of nature's laws.

Explanation. — It is not easy to explain how inflammation and ulceration of the uterine neck should in one case produce suppression, and in another profuse menstruation. Yet it is a settled truth, that such opposite results do come from one and the same apparent cause. Probably the explanation is to be found in the different degrees of inflammatory action, in the varieties of constitution, and in the variant degrees of tenacity with which the vessels hold the blood.

Bleeding from the female genital organs may be produced by a variety of causes which have nothing to do with menstruation. Such bleedings are properly *uterine or vaginal hemorrhages*, and not profuse menstruation. They are the result of inflammations, or tumors within the uterine neck (Fig. 136), or weakness. The womb may bleed for days, or even for months, from pure debility.

Fig. 136.

Treatment. — As profuse menstruation and uterine hemorrhage spring from a variety of causes, so the remedies are various. Here again we are confronted with the same absolute necessity to investigate accurately

the true nature of the complaint, before we venture a single prescription. All the cases present one general feature. There is too great a loss of blood; and the first thought is that astringent medicines are necessary to arrest it. But if the bleeding be occasioned by a polypus, or by inflammatory ulceration, astringents would not arrest it, and might do great mischief.

When the immoderate flowing is caused by a general breakdown of the nutritive powers, and by ovarian abortions, the great aim must be to rally the vital powers by iron, quinine, porter, wine, a generous diet, exercise on horseback and on foot, and warm and cold bathing. When produced by local diseases of the ovaries and neck of the womb, the treatment is to be local, — such as has been described. If a polypus, or other tumor, be the cause, the remedy must be sought for under the appropriate head. If the womb has become relaxed, and bleeds from pure debility, — as it may, — something must be found, if possible, which will condense its substance, — making it harder, smaller, and more solid. For this purpose, cold bathing, astringent injections into the front passage, and acid drinks, are useful. But one of the best remedies is the wine of spurred rye (267). One teaspoonful should be taken three times a day. This article, by causing the womb to contract, solidifies and condenses it, — thus arresting the blood which oozes from its relaxed tissues.

Case. — Miss S. F. was treated, in 1855, for great loss of blood by too frequent and too profuse menstruation. She had suffered for a number of years, — her courses coming on every three weeks, sometimes every two weeks, and lasting from a week to ten days. She had become very pale, and much debilitated; and, as she had a slight cough, her friends feared that, if not relieved, she would soon sink in consumption.

Having made an examination, and learned that there was no organic disease, but that the exhaustive bleeding was caused entirely by debility, I prescribed sulphuric acid (60) three times a day, with half a pint of cold water injected into the bowel once a day, and quinine (67) three times a day.

The patient was required to take a very generous diet of juicy meats, broths, etc., and to be in the open air to a reasonable extent.

The case began immediately to improve, and in a few weeks the courses were restored to a healthy state. No other treatment was used, except to drop the sulphuric acid in two instances, for a few days, using in place of it, tannin in one case, and alum in the other.

Painful Menstruation. — *Dysmenorrhœa.*

Dysmenorrhœa is from three Greek words δυς, μὴν, and ῥέω, which mean, literally, *a difficult monthly flow*. These words do not precisely describe the complaint; for it consists not so much in a *difficult*, as in a *painful* flow.

Symptoms. — This affection is always marked by more or less pain

while the courses are on, — especially during the first day or two. The pain sometimes begins two or three days in advance of the evacuation. It extends over the whole lower part of the belly, — running down, at times, to the thighs, and causing great distress in the back. It is frequently so violent as to resemble the pains of labor, compelling the sufferer to take the bed, and drawing from her tears and groans, and occasionally throwing her into spasms most painful to witness. So terrible are the monthly sufferings which some women experience from this cause, that the anticipation of it destroys much of their peace, even during the intervals of respite.

The Causes of this complaint are very numerous. There is, doubtless, such a thing as pain in the womb from rheumatism, and especially from neuralgia, though these are much rarer forms of the complaint than many suppose.

Pains at the monthly periods are often induced by a displacement of the womb. If the organ fall over backward or forward, its nerves are pressed upon in an unnatural way, and when the parts are crowded with blood, it is very natural for painful sensations to be excited. In these cases, the neck of the organ is bent at right angles, and the canal which passes through it is of course *strictured*, so that the evacuations are necessarily made with difficulty.

And this leads me to remark, that the passage through the uterine neck, becomes, occasionally, from inflammation or other cause, almost closed. The result is, much difficulty and great pain in passing the monthly secretion.

There are no causes which excite painful menstruation more often than inflammation in the uterine neck and the ovaries. An increased flow of blood to an inflamed part always causes pain. An inflamed foot or leg has to be laid up in a chair, because it aches when put down. The reason is, that when hanging down, it is more full of blood, and the sensitive nerves are painfully compressed. When the finger is hot with inflammation, *we assuage the pain by holding it up for the blood to run down.* For the same reason, the inflamed ovaries and uterine neck ache when the blood flows to them, in large quantities, at the menstrual period.

Congestion of the lining membrane of the womb itself is a frequent cause of painful menses. *It is a condition of the membrane of the womb, similar to that of the larynx in membranous croup.* There is the same pouring out of what physicians call coagulable lymph, which forms itself into a membrane. This membrane the womb strives by strenuous contractions to throw off, and finally succeeds in expelling it, not whole and entire, *but in shreds and patches.* These shreds, which women sometimes call *skinny substances*, are characteristic of the disease. The efforts to expel them cause pains very much like those of natural labor, and sometimes almost as severe.

Treatment. — Painful menstruation, excited by the falling over of the womb, backward or forward, is cured, of course, by putting the organ back into its proper position.

Pains caused by stricture of the canal through the uterine neck, are

cured only by enlarging the passage. This is effected by introducing at first a very small bongie, and then a larger and a larger, until the passage is of the usual size. It is a delicate operation, quite successful in careful and skilful hands, but liable to produce mischief when improperly conducted.

In all the forms of this disease, the treatment should aim, not merely at palliation, but at a cure. And generally, I am happy to say, a cure is attainable. Yet how many women suffer for years, until health has fled, and life has become a burden, — receiving from their medical attendant the assurance that palliation only is possible!

It is necessary at each monthly turn, to do something, in these cases, to quiet the pain. For this purpose, twenty drops of laudanum, in a wine glass of tepid water, thrown into the bowel, will be highly serviceable. For a like purpose, one pill (116) may be taken twice a day, beginning one day before the menstrual flow. A belladonna ointment (170) may be rubbed upon the neck of the womb with great advantage.

In the congestive form of this disease, — *that in which the membrane is formed on the internal surface of the womb, and thrown off in fragments*, — the liquid acetate of ammonia, or spirits of Mindererus, is a very valuable remedy taken in two teaspoonful doses, in a tablespoonful of cold water, three or four times a day, while the pain lasts.

Case I. — Miss E. S. of B., aged twenty-two years, applied, in 1856, for relief from great suffering at her monthly periods. Her menses had been disturbed some time before by taking cold, since which time, her mother stated, her pains, for a short time before the flow began, and during the first day, had been terrible, not much less severe, indeed, than those of natural labor, or child-bearing. The pains, at these times, had been of a terribly bearing-down kind; had frequently been preceded and accompanied by sickness, vomiting, and fever; and finally, what came from her at first was not so much blood, as *a kind of skinny substance, in shreds and patches.*

It was immediately evident that this was a case of painful menstruation (dysmenorrhœa) of the *congestive* kind. The womb was every month too full of blood, — its internal surface, in fact, if not its whole substance, inflamed. Hence, a false membrane like that of croup, was formed, which the womb contracted and struggled hard to throw off, and finally tore to pieces, and *expelled in shreds.*

Of course this local inflammation was to be reduced, which was done by first giving a brisk purge (31), which was followed by applying half a dozen leeches directly over the womb. On the following day, a blister was raised in the same place. In two weeks, three leeches were applied, and again followed by a blister. These applications were repeated every fortnight, for three months, being careful not to use them within three days of the monthly turns, either before or after.

The pain, at each turn, was assuaged, by injecting into the bowel twenty drops of laudanum in a gill of tepid water, by rubbing upon

the mouth of the womb some of the ointment (170), and by giving two teaspoonful doses, in a little cold water, of the liquor of acetate of ammonia, three times a day.

The patient was cured in three months, and has since had easy and natural menstruation.

Case II. — Mrs. L. C. was treated for a case of painful menstruation, in 1857.

The lady also had terrible pains, attended by forcing down as if her bowels were all coming out of her. Yet she had but a very scanty discharge. Every month she was made literally sick, and was obliged to take to her bed.

On examination, it was found that the great difficulty in passing the menstrual fluid, as well as the scantiness of the quantity, was owing to the smallness of the passage through the neck of the womb; this passage was nearly closed up; it was *strictured.*

There could be no doubt as to the treatment required. Medicines could do no good. This passage must be gradually opened. To do this, I introduced a small metallic male catheter into the strictured passage, and, gently turning it once or twice round, withdrew it. This was done once in three days, for three months, — using each time a slightly larger instrument. Thenceforward, her menstruation was natural and easy. She was well.

Chlorosis. — *Green Sickness.*

Before the age of puberty, the girl is only a child. She has within her only the *elements* of a woman. The *change* to which she is destined, brings with it a wonderful development both of body and mind.

To effect this development, and bring out the new being in the perfection designed by the Creator, a large amount of hidden nerve power is required. She requires to have been born with a well-vitalized constitution, and to have been physically trained in a way to harden and energize it. Without these antecedents, her developments at puberty will be feebly and imperfectly made. Her development and *evolution of germs* will be so defective as to cause her menstruation to be only partially established, or to fail altogether.

Symptoms. — Where the inherent powers of the system are just sufficient to bring about a first menstruation, it often happens that they seem to be spent by the effort, and that the evacuation fails to appear again for several months. Indeed, the whole organization may break down at this point, and become blasted, as it were, like a blade of wheat which has grown well for a time, but which fails to develop the kernel.

The blood at this period, may become impoverished, and fail to distribute adequate nourishment and development to the various tissues. When this occurs, it loses a part of its red globules, and increases its watery portion. As a result, the skin becomes pale, and

sometimes of a yellowish hue; the bowels become torpid and confined; the nervous system sensitive and weak; the digestion is impaired; the appetite is either lost, or perverted, — longing for unnatural food; the tongue is white; the heart palpitates; the spirits are depressed; the temples and ears throb; the head occasionally aches and whirls with dizziness; the sleep is disturbed and abbreviated; and hysterics are now and then superadded to close the catalogue of ills.

This is *Chlorosis*, briefly depicted in its origin and its symptoms. The word is from the Greek χλωρός, which means *green* and *pale*. By nurses it is called the "green sickness."

Its Causes are quite numerous, among which may be reckoned impoverished diet, damp atmosphere, sedentary habits, long confinement indoors, overworking the mind in childhood, constipation of the bowels, and an inherited feeble constitution.

Treatment. — Chlorosis, as a general thing, is connected either with retention or suppression of the menses; and in treating it, physicians are too much in the habit of resorting indiscriminately to forcing medicines, called emmenagogues. From such practice, great injury often results.

It is not always sufficiently considered that a woman fails to menstruate, or ceases to do so, *because she is sick;* and if we would cause her courses to return, *we must restore her health.* To do this should generally be the great object of treatment. Let the health be restored, and the menses will come back. The only philosophical treatment is that which will invigorate the system.

In chlorosis, the vital powers are in a state of dilapidation. How can they be roused? By exercise on horseback and on foot; by wearing clothing enough to keep warm; by a tepid bath two or three times a week, and brisk rubbing with a coarse towel; and by a generous diet, composed of tender meats, animal broths, etc.

This treatment, however, should be preceded by unloading the bowels with prescription (35) or (40), according to choice. One pill should be taken at night. When the liver is considerably deranged, prescription (40) will be particularly serviceable. Half a pint of tepid water thrown into the bowel, night and morning, will help relieve costiveness.

The bowels having been well opened, give a tablespoonful of prescription (59), two or three times a day; or, of prescription (60), a teaspoonful, the same number of times, each day.

In the treatment of this disease, iron, in some form, is almost always needed. Prescriptions (61) (71) (73) (74) (75) (80) and (316) are suitable preparations.

A girl suffering from this disease should always be taken out of school. The mind should be divided between rest and recreation.

Case. — Miss J. T., aged nineteen, was treated by me for this complaint in 1858.

She had always been delicate. Her first menstruation was at the

age of fourteen; but it was quite defective in quantity, and was imperfectly repeated two or three times, at irregular periods, when it stopped altogether, and had not again appeared up to the time of her being brought to me.

She was very pale, and a little yellowish, — her lips being nearly white. She was very costive, — habitually so, — was without appetite, and her tongue was coated white. She had dizziness, palpitation of the heart, neuralgic pains in various parts, and was extremely nervous and irritable. Having, in addition to the above symptoms, a pretty constant cough, her friends feared consumption, and brought her to me from some distance for that reason.

I found no physical signs of lung disease, and had no difficulty, therefore, in making it out to be a case of *chlorosis*, — particularly as there was *no expectoration attending the cough.*

The parents were chiefly anxious to have the menses brought on. With me, this was of minor consequence; the main thing was to rally the prostrate powers of life, and restore the blood to health.

To do this, it was necessary to rouse the liver, for which I gave leptandrin, etc. (34), which I ordered to be taken once a day, namely, at bed-time. This not only caused a flow of bile, but the scutelarine calmed and strengthened the nervous system.

It was necessary, too, to correct the habit of costiveness. To effect this, she was ordered to take two teaspoonfuls of Mettauer's aperient, after breakfast and dinner.

To restore the blood, iron was ordered, particularly the citrate of iron and strychnine (316). This had a fine effect to raise the blood and support the nervous system.

She was ordered a generous diet of tender meats, broths, etc., and to take unrestrained and free exercise out of doors.

Her improvement was immediate and visible, and was not interrupted during the three months of her stay in Boston. Soon after her return home, her menses appeared, and she has since enjoyed pretty good health.

Cessation of the Menses.—Turn of Life.

There is probably no period in woman's earthly existence which she approaches with so much anxiety as that which she is in the habit of calling "the turn of life." The anxiety is not without some reasonable ground for its existence. She has been accustomed, for thirty years or more, to lose, every four weeks, a certain amount of blood. When this evacuation stops, disturbances of the system may well be expected. So well is this understood, that this climacteric has come, by general consent, to be called the "*critical period*" in female life.

If it be well and safely passed, the health is generally better than before, and a "green old age" is likely to follow. But if the seeds of disease are in the system, — if there be a tendency to cancer or other malignant disease, which has been held in check by the monthly flow, it now takes up its destructive work, and shows itself; or, if

there be a predisposition to apoplexy or congestion of any organ, it is more likely to become active, now that the accustomed waste-gate is closed. A distinguished writer has said that about half the deaths among women, about the age of forty-four, are from cancer.

Nervous Complications. — It is the duty of the physician to look carefully after those females who come under his care at this critical time. For, in addition to the organic and malignant diseases which attack her at this time, she is exposed to a host of nervous irritations, which, if neglected or badly managed, make her life a cross and a burden. The symptoms of these irritations are in number, legion.

Age at which the turn of life comes. — As a general rule, the turn of life comes between the ages of forty and fifty; but occasionally occurs at other periods, varying from thirty to seventy. If the menses appear early in life, they terminate early.

Symptoms. — When there is a tendency to corpulency at this period, the symptoms are headache, dizziness, and a sense of suffocation. It is common, when the period of cessation approaches, for deviations from regularity to occur. At one time the menstrual discharge will be profuse; at another, scanty. It will now disappear for a time, and be replaced by the whites. Then it will appear for a few times with considerable regularity. Next will come a suspension for several months, to be followed by a flow of such profusion as to amount almost to flooding.

Mixed up with these irregularities, will be palpitations of the heart, constipation of the bowels, a variable appetite, and broken sleep, weakness and inquietude, timidity, a dread of impending evil, irritability of temper, hysterical attacks, bad feelings in the head, with sounds in the ears, as of the rolling of carriages, sparks before the eyes, and an unsteady gait.

Treatment. — If there be at this period, fulness of habit, with dizziness, headache, sparks before the eyes, a sense of suffocation, etc., there is a plain indication that the brain is oppressed with too much blood. I am not much in favor of bleeding, but this is a case in which from a gill to a half pint of blood may, if ever, be drawn from the arm with positive advantage. Cups applied to the back of the neck will also be useful. Give at night, also, three of the compound cathartic pills, and then keep the bowels regular with prescription (18), — a wine-glassful to be taken occasionally. The diet should be spare, and strictly vegetable: — to which should be added much daily exercise.

Purging should not, in any case, be carried too far. If nervous affections show themselves, with disturbance of the digestion, and general debility, even leeches would be improper, and physic should be swallowed very sparingly.

When serious organic disease is suspected, — as cancer, — it is the duty of the physician to investigate the case very thoroughly, and to give the patient the advantage of the most prompt and decided treatment. That treatment is spoken of in the proper place.

Hysterics.—*Hysteria.*

The name of this complaint is from a Greek word, signifying the womb. It took this name from the belief that this organ is the seat of the irritation which produces the hysteric disturbance.

This belief is correct, if we include with the womb, the ovaries, and the other sexual organs. The sexual system is doubtless the centre of the reflex nervous derangement, called hysteria.

It has been sufficiently demonstrated that hysterics are dependent for their existence either upon organic disease, or upon simple irritation of the sexual organs. Sir Benjamin Brodie mentions cases of the hysteric paroxysm, produced by pressing upon an inflamed and tender ovary.

Symptoms. — An attack of hysterics is generally preceded by depression of spirits, restlessness, and a frequent desire to pass water. It is sometimes marked by convulsions, or fits; at other times, it is not. At times, the attacks are local, and are manifested by spasms of the throat at the top of the windpipe, or in the bronchial tubes; *the patient feels a ball rise up in her throat* (globus hystericus), her heart beats violently, and she laughs and cries by turns.

When the disease is more general, the muscles of the limbs are thrown into spasms; the patient struggles violently; rising up in a sitting posture, and then throwing herself back; twisting the body from side to side, clenching the hands, and throwing the arms about, so that she is with difficulty held by persons much stronger than herself. Soon after these paroxysms, the patient generally passes a large quantity of very pale urine.

The Causes of this complaint are as numerous as the causes of female diseases, for in truth there is no female complaint which may not produce it. Whatever develops and excites the sexual system, and at the same time weakens the constitution, lays the foundation of this malady. Nervous women are much inclined to it. In large cities there is more of it than in the country, because there is more excitement and luxury, and more of their consequences, — nervous and female diseases.

Treatment. — To treat this complaint successfully, it is necessary to search out its cause, and remove that. Like the whites, it is not so much a disease in itself, as a symptom.

The first inquiry to be made should have reference to the real origin of the complaint. Is it dependent upon inflammation of the ovaries or the womb, or to displacement of this latter organ; or does it arise from the low state of the blood, and the weakened condition of the nerves, acted upon by some irritation or heightened sensibility of the sexual organs.

If dependent upon inflammatory disease, that is to be treated according to directions elsewhere; if upon falling of the womb, no remedies will avail, until that is put in its proper place. If diluted

Fig 1.

Fig 2.

Fig. 3.

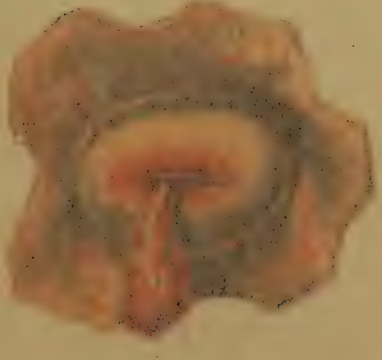


Fig. 4.

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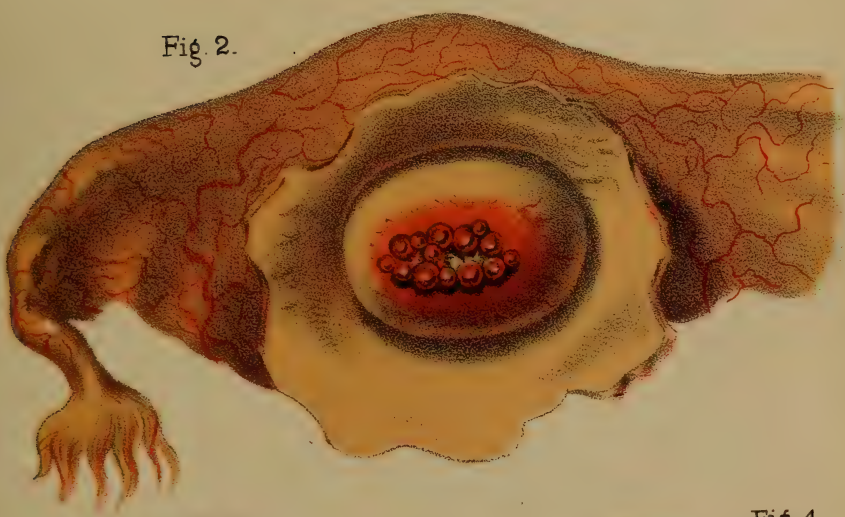


Fig. 3.

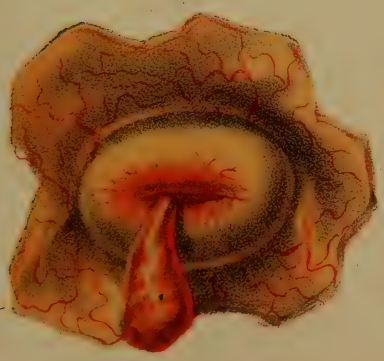


Fig. 4.

blood and weakened nerves be the cause, iron and quinine are the remedies. When the complaint arises from deficient menstruation, iron and aloes (47) will be serviceable. The nervous spasm can sometimes be broken up by pouring cold water upon the head, or face, or limbs of the patient.

The Hygienic and Moral Treatment are of great consequence. The complaint is very much under the control of the will. Whatever tones the moral nature, and strengthens the will, tends to subject this disorder to the control of the patient. Plain wholesome diet, exercise, bathing, and the enforcing, as far as possible, of a rugged, self-reliant habit, generally go far towards breaking its force.

Polypus of the Womb.

This is simply a foreign body, or tumor, growing either within the womb, or in the vagina, and attached to the uterine neck. It is rather a serious affection.

These tumors vary in weight from half an ounce and less, to many pounds. They are, in color, whitish, red, brown, and even black. They have almost every consistence, — being soft, spongy, gristly, and hard.

The Symptoms of polypus are various, resembling those of almost every other womb complaint. It is often mistaken for displacement of the womb, for dropsy of this organ, and for pregnancy.

These tumors are apt to give rise to dangerous bleeding from the womb, and other discharges which greatly weaken and derange the system. They are liable to terminate in cancer. In pregnancy, they may produce miscarriage. When they are suspected, therefore, the utmost scrutiny should be employed to search them out. This is especially desirable, since the fallen or inverted womb may carelessly be taken for a polypus, and be operated on as such.

Treatment. — This is of two kinds, medical and surgical. The first consists in means of supporting the strength of the patient, and checking the discharges by means of injections, rest, etc., and in endeavoring to cause the removal of the tumor by absorption.

This last object is sometime effected by an unstimulating diet; and by the use of iodine (101) for some time. This treatment does not often succeed, however, and cannot be relied upon.

If the polypus be within the womb, of course it cannot be reached. The only thing to be done, in such case, is to cause its expulsion. This is sometimes effected by causing the womb to contract by the use of spurred rye (267), or by the use of the electro-magnetic machine. This latter remedy can do no harm, and had better be tried first.

When the polypus is outside the womb, the methods of removing it are various. It is sometimes done by cauterization, or burning it off by hot iron or caustic. This is a harsh method, and not resorted to by skilful surgeons. Another method is that of crushing the tumor

with an instrument. Another still is that of torsion, or twisting it off. And still another, that of applying a ligature, or tying a string around the neck of the tumor, and strangling it by preventing the blood from going to it. By this means it falls off in a few days. There is one other method, that of cutting the tumor away with a knife, or with a pair of curved scissors. These three last methods are the chief ones now used by skilful surgeons.

Case I. — Mrs. J. W. H., from one of the cities in New England, applied for treatment for an affection of the lungs, from which she had suffered for several months. She was thin in flesh, feeble, and pale from loss of blood; for she informed me that her courses had been upon her a large part of the time for several months. I tried the usual remedies for profuse menstruation (for she at first declined an examination), but without effect. The hemorrhage was unabated, and she rather lost ground. I again proposed an examination, and apprized her that upon it hung the only hope of my being able to do anything for her. She assented without further hesitation.

Upon introducing the speculum, a pendulous tumor, hanging from the mouth of the womb, immediately dropped into it, precisely like that in PLATE VIII., Fig. 3. I immediately put a ligature around its neck, and in a few days it came away. Upon being apprized of this, I applied to the root a small amount of acid nitrate of mercury, with a camel's hair pencil, and immediately after pressed upon the cauterized surface a small velvet sponge, thoroughly wet with soap suds. By this last application, the acid was decomposed, and prevented from spreading. The bleeding stopped at once. Under the use of iron, and a thoroughly rallying treatment, the lady began to come up. The affection of the lungs, no longer encouraged by the drain upon the system, gradually yielded, and she recovered.

Case II. — An unmarried lady, from an interior town in another state, sought relief for a throat disease, complicated with a slight affection of the lungs. As my custom is, I inquired respecting her menses, and learned that her "turns," as she said, came upon her every two weeks, or oftener, — indeed, that she was seldom entirely free from some flow. Upon making an examination, — to which, like a sensible woman, she assented without hesitation, — I found about the mouth of the womb, as in PLATE VIII., Fig. 2, several small projecting tumors, looking like ripe, red currants. With the forceps, I took hold of them, and in a few moments, without pain to the patient, I twisted them all off; and then made the same applications as in the preceding case. The bleeding was ended at once; and the patient got well, not only of the hemorrhage, but of the throat and lung complaints.

Uterine Hydatids.

THIS name is given to a bladder-like substance, occasionally found growing in the womb. It is filled with a white or yellowish fluid.

Sometimes a bundle of them grow together, like a bunch of grapes. Some are elongated, like a bean, and have a sort of claw, by which they are attached; others are shaped like an egg.

Those with a claw are generally supposed to be living beings, like worms in the bowels. When expelled from the womb, they move about if placed in warm water.

The Causes which produce these singular growths, are obscure. Probably whatever improperly excites or irritates the uterine organs may produce these vesicular bodies.

The Symptoms may be easily mistaken for those either of pregnancy, or of water or inflammation in the womb.

From the growth of these bodies, the bowels may enlarge, the breasts swell, and the menses stop. If to these symptoms be added sickness at the stomach, the woman, if married, feels confident she is in the family way. There is no certain method of correcting this mistake, until the collection of bladder-like bodies is expelled from the womb.

It is rare that these bodies appear in the virgin woman. They are supposed to be connected, in some way, with imperfect conception.

Treatment. — No very exact directions can be given in regard to treatment, because we can seldom say absolutely that hydatids exist, until we see them expelled. Whatever will produce contractions of the womb, will cause their expulsion; but it will not do to give these remedies indiscreetly, lest the cause be one of real pregnancy instead of hydatids.

Inflammation of Womb.—*Metritis.*

This disease very often follows delivery, and is connected with child-bed fever.

Various Causes also produce it in the unimpregnated state. The inflammations of the ovaries, or of the uterine neck, may extend to the womb. Falling of the womb may cause it to be irritated by being placed in a new position, and thus bring on inflammation. In some temperaments, marriage may produce this disease; in others, singleness. It may also be brought on by painful menstruation, by forcing medicines, by constipation, by tight corsets, by solitary vices, and by excited sexual feelings.

Symptoms. — When the membrane lining the womb is involved in the inflammation, the symptoms are dull, constant pain in the region of the womb and in the loins. The passage of water or feces causes pain. There is a sense of weight which causes the patient to bear down and strain, as in labor. The belly swells, and is painful and tender, not bearing even the weight of the clothes. There are chills, fever, and sometimes even delirium.

Treatment. — In this, the aim must be to reduce the inflammation.

The bowels must be opened with some saline medicine (18), perspiration must be induced, and the hands and feet must be made warm. A large meal poultice should be put upon the belly, and leeches or cups on the inside of the thighs. The patient should lie upon the back with her knees raised so as to keep the clothes from pressing on her. If the purgative medicine does not operate, an injection (249) should be used.

The food must be reduced almost to entire abstinence, and no stimulants whatever should be taken. The room must be well ventilated, and kept still.

Falling of the Womb.—*Prolapsus Uteri.*

The womb is often found out of its natural and proper place. There are certain ligaments and muscles intended to act as stays, and hold it up in its position. These, from various causes, become *rlaxed.* It then, losing its support, drops down into the vagina, between the bladder in front and the large bowel called rectum, behind. It is then said to be *fallen*, or *prolapsed.*

The womb of married women is more apt to become prolapsed than that of the unmarried, because it is more liable to have its weight increased by congestions.

The Symptoms are dull pain in the small of the back, a dragging sensation in the groin, and a feeling of fulness around the fundament.

Treatment. — The complaint is easily cured if the remedies be applied early. If the falling be occasioned by a relaxed and weakened condition of the parts, a very effectual relief may sometimes be derived from simple injections of cold water into the front passage, alternating them sometimes by an infusion of white oak bark, or of nut galls, or a solution of tannin.

If the womb have been long down, these simple remedies will not be sufficient to restore it. It is then necessary to put it back in its place, and employ some mechanical means to keep it there, until the ligaments and muscles recover their strength so far as to hold it. For this purpose, passaries, of various styles and materials, are employed.

Falling Over of the Womb.

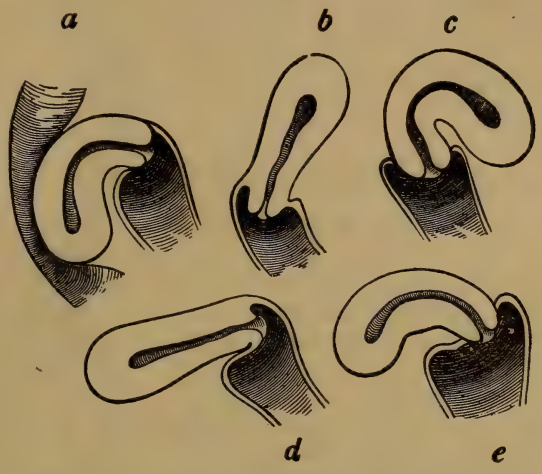
Anteversion. — The womb sometimes falls over *forward* upon the bladder, towards the pubes. This is called *anteversion.* The top is turned forward to the bladder; the mouth, back towards the large bowel. (Fig. 137, *b.*)

Retroversion. — When the womb falls over *backward*, between the rectum and the vagina, it is said to be *retroverted, d.* This is just the opposite of being anteverted. In this displacement, the mouth is turned forward, the top backward.

This displacement may occur suddenly or gradually. If the former,

there is generally great distress, and the organ should be immediately put back in its place; if the latter, the pain will be less intense, and the replacement must be effected by pessaries, — particularly with the ring pessary, made from India rubber.

Fig. 137.



Anteflexion and Retroflexion. — When these occur, the womb is *doubled upon itself*, the mouth of the organ not being tilted up before or behind, but retaining its natural position. These flexions are represented by *a*, *c*, and *e*.

Beside these more common displacements of the womb, there are several slighter deviations which it is scarcely necessary to describe. There is the obliquity of the womb, which is simply a *leaning* of the organ backward or forward, or to one side.

There are still other more serious troubles, which are so very rare as not to require me to dwell upon them, such as the inversion of the womb, or turning it wrong side out, like the finger of a glove; and the hernia of the womb (hysterocele), which is like that of the bowel.

Inflammation of the Vagina.

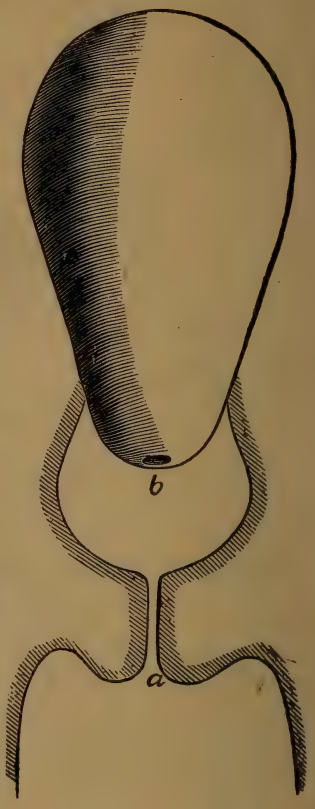
This may be produced by many of the same causes which induce inflammation of the uterine neck. It may follow tedious child-bearing, — especially if instruments have been used. Marriage is not an infrequent cause of it, — so may a pessary be, if an improper one.

The Symptoms are pain in the groins, a feeling of heat and tightness in the passage, and a difficulty in passing water. In a few days a discharge, like gum water, begins to flow, which gradually becomes thicker, like cream, and is green or yellow. Sometimes the disease gets well in a few days; at other times, it degenerates into the chronic forms, and lasts a long time. It should be cured as soon as possible,

lest the inflammation cause the walls of the passage to grow together, and make a stricture, as in Fig. 138.

In this Figure, *b*, represents the mouth of the womb; *a*, is the lower entrance to a narrow passage in the vagina, called a stricture. It is caused by inflammation, which so thickens the walls of the vagina as to bring their inner surfaces near together. In examining a case of this sort, a practitioner needs to be on his guard lest he mistake the entrance to the stricture, *a*, for the mouth of the womb, *b*, — a mistake which might lead to evil consequences as well as seriously damage his professional character.

Fig. 138.



Treatment. — The diet should be light and unirritating. The bowels should be kept open. A cooling wash (207) (218) should be used several times a day, until the discharge becomes thick, — then employ injections (232) (202) (244) (243) of a more astringent nature. Let the marriage bed be abandoned till the recovery is complete.

When the discharge arises from small granular elevations upon the inner surface of the vagina, the whole diseased surface should be painted over with a solution of nitrate of silver, twenty grains to the ounce of water, — the disease being brought to view by the use of a speculum. This may be done every other day.

Itching of the External Parts. — *Prurigo of the Vulva.*

This complaint is apt to attack females about the cessation of the menses, though they are liable to it at other periods. It is a most annoying and distressing affection. So terrible and tormenting at times, is the itching of the external genitals, that the woman is unable to avoid rubbing and scratching, and she is occasionally compelled to absent herself from all society. She feels, as she says, as though she should tear herself to pieces.

Sometimes this irritation of the sexual organs excites venereal thoughts so dominant and controlling as to constitute a real mania, called *nympho-mania*, from the name of a part involved.

This complaint generally indicates some disease of the womb, or its appendages, or of the bladder. When this is the case, of course it cannot be cured without seeking out and removing the disease, of which it is a symptom.

Treatment. — To alleviate the local suffering, the lotion (223), or the ointment (171), may be applied to the parts several times a day. I prefer the lotion. A weak solution of nitrate of silver (211) will sometimes do well.

When the disease is brought on by masturbation, as it sometimes is, this habit must of course be broken off before a cure can be effected. In this case, also, cold water must be applied to the parts several times a day; some of the preparations of iron should be taken, and some active employment be engaged in, which shall absorb the energies of mind and body.

Sterility or Barrenness.

It has doubtless occurred to every person who nas thought upon the subject, that there must be some special reasons why so many women do not and cannot bear children. These reasons I propose now to explain as simply and as plainly as the nature of the subject admits. To this explanation, I shall add some remarks upon treatment; for, in nine cases out of ten, barrenness is completely curable.

Reproduction. — Throughout nature, life is perpetuated by reproduction. The vegetable and the animal die; but before death comes, they reproduce the *germ* of a new thing or being, which lives after them. The law of reproduction, throughout the realm of nature, is one, and but one. All living things have male and female structures. Every new being is evolved from an egg, the product of an antecedent parent.

Reproduction consists in the growth of an egg or germ in connection with some living part, until it is capable of independent existence. This germ or egg is the product of the female parent, and will abort or perish unless brought in connection with a fructifying fluid from the male. Thus, two palm trees, growing about forty miles from each other, the one without stamens (the male organs), the other without pistils (the female organs), bore no seed for many years; but when they had risen in height above all intervening and obstructing objects, the winds bore the pollen from the stamens of one to the pistillate flowers of the other, which immediately began to produce fruit. A knowledge of this great law, as applicable to all living things, enables horticulturists to raise such varieties of fruit as they wish, by shaking the blooming male branch, which has stamens, over the female flowers, supplied with pistils. Sometimes the male and female flowers are upon the same plant, — at other times, upon different ones. The strawberry is of the latter kind, — the pollen being found only on the plants which have the largest flowers, — the pistillated flowers being only on the smaller plants. The pollen, or dust, is carried from the male to the female plant on the feet of honey-bees, as they fly from flower to flower. It has been recently discovered that the reason why many beds are unfruitful (strawberry beds, I mean) is that the large male plants are allowed to monopolize the beds to the exclusion of the smaller female plants. The plants with

large flowers should be thinned out, leaving only a few to furnish pollen for the females, which are the real bearers.

A New Branch of Industry. — It is only quite recently that this law has been understood in its wide applicability. How wise and merciful an arrangement of Providence that an unseen hand should turn for man the mystic leaves of knowledge at the very time when he is most in need of the instruction imparted! At this very moment, the more complete knowledge of this great law is opening a new branch of industry and a new supply of food, and is thus helping the solution of the great problem of how the increasing inhabitants of civilized countries are to be worked and fed. I refer to the propagation and culture of fish.

A committee appointed by the legislature of Massachusetts, in 1855, reported very ably upon this subject. It appears that the eggs of the fish may be fecundated almost as easily as the pistillate flowers of the plant. It is only necessary, when the eggs of the female are mature, to hold her over a basin of water, and make gentle pressure upon the belly, when the eggs will pass freely into the water; then to pass the milt of the male into the same water, and shake them thoroughly together. By this means, the eggs are impregnated, and fish may be raised to any extent.

The egg of the higher animals is more difficult to fecundate, and that of the human female, most difficult of all; for in nature as in art, the more perfect structures are begun and reared with less ease.

Propriety of Imparting this Knowledge. — Men are naturally curious, and love to understand the mystery of their own origin; and yet there is scarcely any subject upon which they have so little reliable information. It has been held that this is a kind of information which it is not proper to impart to the multitude; that the curiosity which seeks this knowledge is based upon improper feelings; and that to gratify it by imparting what is sought, would lead to immorality.

I do not believe it. Such ideas are based upon a shallow philosophy. They overlook the fact that nothing excites the imagination like that which is covered with mystery. It is *because* the immensely important subject of the procreation of the race is so carefully hidden from the public eye; *because* it is purposely buried so deep in obscurity, that any allusion to it excites improper thoughts. If the subject be properly viewed, it is no more indelicate to explain the mode of reproducing a human being, than to explain that of propagating a plant or a fish. Both are effected in the same way, under precisely the same natural law.

True, the propagation of the human being involves moral laws likewise; but these relate only to the social relations in which it may take place, and do not affect in any way the propriety of making it understood by the people.

The Germ Furnished only at Certain Periods. — These general remarks bring me to the immediate subject in hand. Throughout

animated nature, the female furnishes the mature germ or egg only at certain periods. The healthy human female, — as I have already explained, — matures a germ once in four weeks. These germs or eggs are constantly advancing, in succession, from the rudest beginning, to a state of ripeness, or maturity. Every person must have seen the eggs taken from the hen when killed in the laying season. Fig. 139 furnishes a good illustration They are in all stages of progress, from the invisible germ, up to the nearly mature egg.

Fig. 139.

Such is the progress of the human egg, — only that it does not attain to any such size. So far as the maturing is concerned, it occurs in the same gradual way.

Conception or Impregnation can take place only when a germ or egg is ripe; and as an egg ripens, bursts, and passes into the fallopian tubes leading to the womb, only at the time of menstruation, it is plain that conception must happen somewhere in the neighborhood of this period. Intercourse with the male may take place at intermediate times; but, except in some rare instances, conception will not occur, because there is no mature egg to be impregnated.

Now, as every healthy woman brings to maturity a germ or egg at the time of every monthly flow, and as every ripened egg is capable, under favorable circumstances, of being fecundated, it follows that every woman who menstruates, and is well, can, under certain circumstances, be impregnated. To effect it, it is only necessary that the vivifying portion of the male semen, called spermatozoa, come into union with the ripened egg.

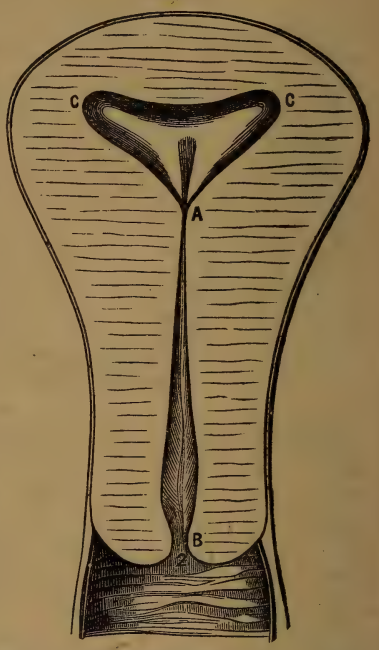
Fig. 140.

This union (for, that men and women may have a chance to know as much about themselves as they do about fishes and plants, I propose to make the whole subject plain) takes place in the following way. In the act of copulation, the male organ penetrates the vagina, and deposits the sperm, spermatic fluid, semen, or, as the scriptures call it, the "seed," directly at the mouth of the uterine neck. Some suppose that when the sensation of the female is at its height, the womb opens to receive the injected semen. But this is uncertain.

This spermatic fluid is composed, in a large part, of mucus. A smaller portion of it is secreted by the testicles, and is the true semen,

or life-giving principle. This last portion is composed, almost entirely, of fertilizing filaments or vesicles, which look like small animals (Fig. 140), and for a long time, were supposed to be animalcules. They are generally called *spermatozoa*. By some mysterious law of their nature, they are endowed with the power of motion; and when deposited near the mouth of the womb, they immediately begin to move, as if by instinct, in search of a ripened egg. Passing through the uterine neck, they enter the womb, and thence glide onward into the right and left fallopian tubes, and through these to the ovaries. If an egg be found, in its ripened condition, either in the womb, or the tubes, or about leaving the ovarian bundle, they immediately embrace it, and, in some mysterious way, mingling their own fluid contents with the contents of the egg, they impregnate or fertilize it. Fig. 141 shows the womb divided lengthwise. A, is the *internal mouth* (os internum), or point where the canal through the uterine neck enters the body of the womb; B, is the *external mouth* (os externum) ; the space between A and B, the passage through the neck; and C, C, the points where the fallopian tubes begin. By looking back now, and examining Fig. 134, the whole thing will be understood.

Fig. 141.



This is a very brief and simple account of impregnation. It is supposed to be capable of taking place either a little before or a little after the monthly flow, and not at intermediate times, for the reason already stated. There are some reasons for believing that the same egg or germ, if fertilized just before the courses, will grow to be a male, while, if fecundated after the turns, it will be a female. One reason for this supposition is, that plants may be made to bear male or female flowers by simply subjecting them to different degrees of heat. If there be more heat than light, male flowers are produced; if more light than heat, female flowers are the result. The heat of the female generative organs is raised to its highest degree about the time the egg bursts its covering, which is just before the beginning of the flow.

It has been thought that the right ovary produces males, and the left ovary females; but this theory is not supported by any facts, and is probably not trne.

Causes of Sterility. — From what has been said, it would appear that to ensure childbearing, it is only necessary that semen or seed, containing spermatozoa, come in contact with a germ vesicle or egg,

at the right time; that there be no hindering disease; and that the parties cohabiting be adapted to each other.

It is evident enough that a want of adaptation between the parties, physical or moral, or both, is often an absolute bar to conception. A lack of moral adaptation was probably the obstacle in the case of Napoleon and Josephine, — her marriage with a previous husband, and his with a subsequent wife having both been fruitful.

It is certain that indifference on the part of the wife towards the husband, and especially repugnance, may prove an obstacle. A mere lack of sexual feeling does not necessarily prove a bar, though it probably lessens the chances of a fruitful union.

Conception may fail to take place from the diminutiveness of the male organ, — the semen not being deposited in the right place; or, from its excessive largeness, — penetration of the vagina being impossible. In some rare cases, the womb is absent. The inflammation of the ovaries often prevents the ripening of eggs. The fallopian tubes occasionally get diseased and plugged up, so that no egg can pass to the womb. Inflammation in the cavity of the uterine neck is probably the most frequent of all the causes of sterility. The viscid, gluey matter which is secreted in inflammatory conditions of this part, plugs up the passage, so that no spermatozoa can pass up in search of the egg. The acrid discharges in most of the cases of whites destroy the fertilizing spermatozoa, and render conception impossible. All the displacements of the womb may act as bars to impregnation. If it fall over backward or forward, the mouth is tilted up before, or down behind, and is not in the right position to receive the semen

Treatment. — Judicious treatment will, in most cases, remove sterility, and open that "well-spring of pleasure," which the poet has so felicitously described as — "a baby in the house."

The obstacles to conception, stated above, are chiefly those diseases which had been previously described. To cure those diseases, is to remove the obstacles. When it is dependent on the causes which produce painful menstruation, or profuse menstruation, or a suppression of menstruation, the remedies are the same as are pointed out for those complaints. If inflammation of the ovaries be the cause, a cure may be effected, provided the inflamed condition be removed before the bundle of eggs be destroyed. If inflammation or ulceration of the neck of the womb be the obstacle, the remedy may be found in the treatment recommended for those affections.

Sterility depending on the causes just mentioned, I have had the pleasure of curing many times. When dependent on a lack of physical or moral adaptation between the parties, it does not, of course, admit of relief. It is a misfortune to be borne in silence. It has happened, perhaps, through a lack of judgment or care in selecting a partner, and is one of the mistakes of a lifetime which a lifetime cannot repair. When this want of adaptation is not complete, a remedy may frequently be found.

Unfortunately, many females do not regard sterility as an evil to

be deplored, but rather as a blessing to be desired. Life, to them, has no high aims or duties, — it is a round of fashion and pleasure. To bear and rear children interrupts their frivolities, and they seek to escape such abridgment of their pleasures. This is wrong. Life is a great theatre, in which all should strive to act some worthy part, and feel that, upon retiring, it would be wrong to leave their garments upon the vacant stage, with none to put them on, and continue the drama.

Case. — In 1854, a lady, twenty-five years of age, was brought to me by her husband, in the hope that some relief might be obtained for some female complaints, from which she had suffered for a number of years, and which threatened to make a wreck of her health, if not to destroy her life.

Having come with the full purpose of having the case properly investigated, both herself and husband readily assented to an examination, which revealed a highly inflamed and swollen condition of the neck of the womb, with a small ulcerated patch immediately around, and extending some half inch within the cavity. She had for a long time suffered severe pain at her monthly turns, with great and distressing bearing down both before and after her menstrual flow; her back was weak and painful, making it impossible to walk out of doors, or to stand much upon her feet. She had become nervous and much debilitated, and had pains at times in her chest, her liver, her head, and limbs; was distressed by all sorts of disturbances of the stomach; and had become, as she said, about as thoroughly unfitted for all the useful purposes for which human beings are made, as she well could be.

She had been married five years; but, as might be expected from the condition of the uterine neck, she had no children.

Introducing a glass speculum, I took a caustic holder, with a piece of stick nitrate of silver in it, and touched the whole surface of the ulcer in the mouth of the womb as far as it could be reached. I directed her to take one to two teaspoonful doses of the tincture of scullcap every night, to quiet the nerves and promote sleep, and requested her to come to me again in a week.

At the next visit I reached the upper part of the ulcer in the uterine neck with a delicate silver syringe, and threw a fine shower of a strong solution of nitrate of silver upon all sides of the ulcer, and prescribed, in addition to the scullcap, pills of iron, etc. (75), to be taken three times a day.

I directed her to see me once a week, which she did for four months. The improvement, after the second week, was gradual and steady, — so much so, that little variation was required in the treatment. At the end of four months, the inflammation and ulceration had both disappeared; her pains and aches had all silently withdrawn; she could walk, ride, and stand upon her feet; and, in brief, she has since, to the delight of herself and husband, borne two children, and enjoyed tolerably good health.

Midwifery.

A STOPPAGE of her courses is most commonly the first notice a woman has of her being in the family way. This is perceived two or three weeks after conception, when she begins to experience other feelings peculiar to the situation. These feelings are *nausea* and *vomiting*, or a decided languor, in the morning; swelled and sometimes painful breasts; the areolæ, or colored rings around the nipples *darker* than usual; pain in the lower part of the back; and, occasionally, a good deal of spitting of a frothy, cotton-like substance.

These symptoms are more or less severe in different cases, and under different circumstances, according to the state of the patient's bowels, and her habits of exercise. Ordinarily, she suffers most during the second and third months, on account of the

Sinking Down of the Womb, which, from soon after the period of conception, is gradually increasing in size and weight. As it grows larger and heavier, it sinks lower in the cavity of the pelvis, until about the fourth month, when, becoming so large that it cannot longer be accommodated within the narrow limits of this unyielding *box of bones*, it is obliged to mount higher to find room in the ampler and more distensible belly. This low position of the womb in the early months of pregnancy, occasions many disagreeable sensations, — as pain in the lower part of the back, and sickness at the stomach.

The Costiveness, too, from which women suffer so much at this time, is often caused, in part at least, by the pressure of the enlarged womb upon the lower bowel. Costiveness, thus induced, at length becomes itself a cause of serious mischief. The lower bowel, filled and enlarged with its hardened contents, reacts upon the womb, crowding it still lower in its narrow quarters, and greatly increasing its excitability. The enlarged bowel and womb combined, make constant pressure, *sometimes* upon the urethra, or water-pipe, causing pain and difficulty in making water, and *always* upon the ascending veins, checking the return of blood, and producing congestion in the lower bowel, manifested by troublesome *piles*.

Treatment of Pregnancy. — When the pregnant woman first recognizes her situation, she should determine to "observe moderation in all things." Let her avoid violent and sudden exertion, and move about more calmly and evenly than usual. By this is not meant that she should give up her customary occupation; but that she should pursue it with becoming carefulness, resolved in no case to hazard over-exertion, and rather leaning to the side of indolence. This would not be *real indolence*, for she is doing a *great work internally*, and should not unduly withdraw her energies to external affairs.

Let her not be too much in the erect position. If of delicate constitution, and not in vigorous health, she should make it a point to lie down several times during the day. The standing position, continued for a long time, especially if it be under circumstances

to induce fatigue, greatly favors the descent of the womb, — while a frequent rest in a horizontal position, may enable it to keep its place.

An Objection. — It may be objected by some, that a large majority of the mothers in the world are working women, and obliged to contribute by their industry to the support of their families; and that they cannot afford, therefore, to lie still, and mind directions.

To this it may be answered, that it is a great advantage to understand the best way, so as to have the privilege of at least aiming at it. Much is accomplished, in all circumstances, by aiming at doing the best thing; and few women are so situated that they could not so favor themselves as to obey the laws of health a little more perfectly, if they thoroughly understood them. All can better afford to avoid sickness, than to be sick. Many occupations, also, unless money tempt to excessive application, become, when steadily followed, comparatively easy and unexciting. Thus, most people can go through their usual round of duties, because they have *got used to it.* Indeed, there is nothing but indolence itself, to which we may not become accustomed. The difference between the laboring and the privileged classes is more imaginary than real. All must work. None can escape the primeval decree — "In the sweat of thy face shalt thou eat bread."

Many women, when they find themselves in the family way, will observe no cautions, but work all the harder, and even use other means for the purpose of bringing on abortion, and preventing an increase of children. This unnatural and wicked, but too prevalent, disposition, results sometimes from a fear of the pains of child-birth, sometimes from a desire to avoid the necessary care and confinement connected with raising children, but most often from a wish to escape the expenses which the prevailing fashions and customs of society connect with a large family. The cost of a shattered nervous system, and of a body weakened and poisoned by powerful drugs, is not considered, because not understood! Hence the success of those quack advertisements, impudently professing to cure female diseases, but whose chief object is disclosed by the insertion of the hypocritical caution — "Be careful not to take this medicine during pregnancy, as *it will be sure to produce abortion.*"

It seems as if the world would never learn that God loves children, although since Abraham's day he has said so much about them in his word, — although His Son, sent into the world on purpose to show the disposition of the Father, took them up in his arms, and blessed them, — and although He has implanted a most wonderful love of them in the soul of man.

Costiveness and Piles. — Let the pregnant woman use all proper means to keep her bowels in order. She will thus greatly diminish the distressing nausea, and may entirely prevent the accession of piles. To accomplish this object, the saline aperients (7) (5), or, occasionally, other mild cathartics (10) (12) (14), may be used. But more important than either or all of these is the frequent use of a

good self-injecting family syringe. An injection of half a pint of cold water every morning, will do much towards regulating the bowels, and preventing or curing piles.

Nausea. — If, as sometimes happens, there should be persistent nausea after the first three months, it will need to be combatted by mild tonics and stimulants, as chamomile tea, or clove tea (58) (114), and by seeking a kind of diet which will be agreeable both to the palate and the stomach. Dr. Meigs speaks of champagne as a remedy, and mentions some serious cases entirely relieved by it.

The Nipples. — During the last month, particular attention should be paid to the nipples. Untold misery often results to the young mother from *sore nipples;* and it is well worth her while to use every precaution against them. The nipples are of course in an excitable state during the whole period of gestation, and at length frequently become irritable and tender. Let them be daily bathed, for three or four weeks before confinement, with some astringent and cooling lotion, as oak-bark decoction, borax water, alum water, or a solution of tannin (200) (201) (202) (203).

The object of treatment, in this case, is to toughen them, and render them less susceptible, so that they may not be made tender by the subsequent application of the child's lips.

When a woman is peculiarly liable to this trouble, the further precaution of having them gently drawn, by some friend, every day, during this last month, would be of great service.

At all events, let no pains be spared to guard against this evil; for sore nipples make sore breasts; and sore breasts make broken breasts; and broken breasts are terrible things. They make the mother sick; and if the mother is sick, the child is sure to be sick; and all hands soon get sick and worried; and the whole business of having children, and taking care of them, is deprived of its peculiar joys and consolations, and brought into undeserved disrepute. Whereas, under wise and prudent management, there is something delightful to the young mother in yielding sustenance to her dependent offspring. For, when her nipples and breasts are in a healthy state, she can say with the poet, as

> "The starting beverage meets its thirsty lip,
> 'T is joy to yield it, as 't is joy to sip."

Swathing. — In advanced pregnancy, much assistance in supporting the burden is sometimes derived from swathing the bowels. Healthy and vigorous women, however, need no such assistance; it is chiefly applicable to cases of debility, either constitutional, or resulting from neglect, or from over-exertion during former pregnancies.

Cramp in the Stomach is sometimes very severe, and if allowed to continue, may kill the child. The best remedies are warm carminatives (114) (115), or anodynes, etc. (121) (122), or antispasmodics (90) (94).

Headaches. — These may be relieved by antispasmodics, etc. (90) (94), or anodynes (121).

Palpitation of the Heart may prove very distressing to delicate women. The remedies are the antispasmodics, with rest. Sometimes tonics are useful, such as the muriated tincture of iron (73). The bowels should be carefully regulated.

Fainting, which occurs before or at the time of quickening, is sometimes very troublesome. The proper treatment is the avoidance of fatigue, and, during the fainting fit, the recumbent posture, cool air, application of cold water to the face, and ammonia to the nose.

Cough is sometimes present. It is caused by the upward pressure of the diaphragm against the lungs, by which they are irritated and convulsed. The remedies may be selected from the cough preparations among the prescriptions.

Varicose Veins. — These cannot be removed during pregnancy; but they may be relieved by great care of the bowels, and by wearing tight bandages, or elastic stockings.

Swelling of Lower Limbs is caused by pressure of the enlarged womb upon the veins; and may be relieved by care of the bowels, and diuretics (130).

Itching of the Genitals may be much relieved by borax, morphine, etc. (204).

Miscarriage.—Abortion.

When a woman in the family way throws off the contents of her womb, or loses her child, during the first six months, the accident is a miscarriage, or abortion; when the same thing happens during the last three months of her term, it is a premature labor.

Symptoms. — If abortion occur during the first month after conception, the symptoms may not attract much attention, or, may be regarded only as an irregularity of menstruation. Occuring at later periods, it is frequently indicated by some feverishness, coldness of the feet and legs, a puffed-up condition of the eye-lids with purplish discolorations, shooting pains in the breasts, which become soft, pains in the back, bearing-down pains in the lower part of the bowels, which come and go, and at length take the character of real labor pains. As these pains increase, blood begins to appear, and, sooner or later, the bag of water breaks, and the fetus is thrown off.

Causes. — These are very numerous. Some of the principal are, displacement of the womb; ulceration of its neck; syphilitic disease of the fetus received from the parent; too much exercise; heavy lifting; falls, particularly when the woman comes down upon the feet, and is heavily jarred; emetics; powerful purges; and too much nuptial indulgence.

Treatment. — Where the symptoms are but slight, nothing may be required more than a little caution for a few days, and rest in the horizontal posture, using cold drinks, and taking for two or three nights, at bedtime, perhaps, a pill composed of one grain of opium and two grains of sugar of lead. Beside these remedies, it may be well to put a mustard poultice low down upon the back.

If, notwithstanding, flooding comes on, and the symptoms of miscarriage increase, a napkin wetted with cold water, or vinegar and water, or a bladder partly filled with ice, should be laid upon the external genitals, and pulverized alum, mixed up with a little honey, must be given internally, every half hour; and if the flooding still increase, it may be proper in some cases to resort to the tampon or plug. To do this, take either lint, or old pieces of calico, or a piece of fine sponge, and having soaked it full of a strong solution of alum, or tannin, or, still better, Monsel's persalt of iron, one part to six parts of water, — fill the vagina full, and then place a fold of linen in the genital fissure, and apply a bandage. This will generally stop the flow; but the plug must be removed in from five to ten hours.

If the abortion cannot be prevented, — especially in the latter months of gestation, then the case is to be permitted to go on, and to be treated the same as a natural labor.

Labor.—Delivery.

The expulsion, at full term, of the child, the after-birth, the membranes, and the fluids, constitutes labor, or delivery. It is supposed to occur about two hundred and eighty days after the last menstruation; but authors reckon it differently; in truth, it is not possible to fix it exactly, for it evidently varies in different cases.

When the time of her lying-in arrives, let every woman meet it with calmness and undoubting confidence. There is every reason to encourage this state of mind. Think of the vast multitudes of people in the world. Each one once existed in the womb of a mother, and had to pass through its narrow portals to be admitted to the light. Successful delivery is the *rule*, the world over; and it should be the rule to confidently expect it.

In the midst of the pains of labor, nothing does more to bring a favorable result than courage and patience. Patience is able calmly to survey all the difficulties before her, because she never attempts to encounter but one at a time. There is much philosophy in the story of the "*discontented pendulum*," which got discouraged, one morning from reflecting how many millions of times it would have to swing during succeeding years, but became reassured upon considering that a single stroke cost but a very trifling effort, and that it really had to make *but one at a time*. So it is with labor; its pains, which are really severe and agonizing, will become comparatively tolerable, if the whole attention of the woman be confined to present suffering, and her whole stock of courage and patience be brought to bear upon *one pang at a time*.

Let her resist the temptation to a feeling of haste. Nature will

often proceed more evenly, and more speedily, if allowed to take her own time. A hurry to get through is a great obstacle to successful delivery; it always puts things back.

Symptoms. — One of the first indications that labor is about to begin is, that the woman finds herself *smaller*, — the child having sunk down lower in the abdomen, and she accordingly breathes easier. The genital organs become relaxed and moist, and mucus escapes, which is called "the shows." The woman finds herself disposed to be nervous and fidgety, and perhaps a little depressed in spirits.

When labor has fully set in, it is marked by lowness of spirits, flashes of heat and cold, a great desire to empty the bowels and to make water, and grinding, cutting pains, which grow stronger and more continuous, with intervals of ten or fifteen minutes' ease between. Vomiting in the early stages of labor often occurs, and may be regarded as favorable, — indicating the softening and opening of the mouth of the womb.

Treatment of Labor. — When labor begins, the attention should be directed to the state of the bowels and bladder. The child's head begins early to press upon the bladder and lower bowel, causing the desire to make water, etc.; and these should be immediately emptied to make room for the head to pass more easily. The bowel may be freed by a dose of castor oil (10), if there is time for it to operate, — but more surely, and more satisfactorily, by an injection. Relief in the bladder may, perhaps, be obtained by a different position of the woman in the act of making water. It is the pressure of the child's head upon the water-pipe which causes the trouble; and to relieve it, the woman should get upon her hands and knees, with her shoulders lower than the hips, so as to throw the child upward and forward towards the cavity of the abdomen. Thus situated, she may often find it easy to make water, when in the ordinary position it would be impossible. If, however, this manœuvre does not succeed, and the bladder becomes greatly distended, the catheter must be used.

The Bed and Habiliments. — In the next place, fix the bed, and the patient's habiliments. Reject feather beds; use the mattress. Cover this with a rubber cloth, if convenient, and then with folded sheets to absorb the discharges, and protect the bed. Let the woman be arrayed in the same garments she expects to wear after the completion of the labor, and let these be well tucked up under her arms, and let the lower portion of her body, from the waist downwards, be enveloped in a sheet. This sheet can be easily removed, and the clean clothes pulled down without greatly disturbing the patient when in the exhausted state which follows labor, and when it would subject her to great fatigue to be obliged to sit up in bed to have her clothes changed. Let her lie upon her left side, with her body shortened by bending forward, so that the muscles may be relaxed; let her head be placed in the middle of the bed, and her feet press against the right foot-post. Around this post a shawl or towel may be fastened, upon which she may be allowed to pull during the pains.

The Presentation. — An examination with the finger is to be made to learn the presentation, — that is, to learn which part of the child comes first into the mouth of the womb.

Head Presentation. — If the head present, the labor will probably go on without the need of medical aid. But in all labors there is a liability to dangers from unforeseen accidents, which renders the attendance of an intelligent physician highly prudential.

Breech or Feet Presentation. — If the feet or breech present, it is desirable to have the first part of the labor proceed slowly, so that the passage may become well dilated, and prepared for a more rapid delivery of the head. If the breech present, do not pull down the feet; let the child come double: it will make more room for the head. If the feet present, let there be no pulling upon them to hasten the birth of the breech.

After the feet and breech have fully cleared the external orifice, the delivery may be judiciously hastened for the purpose of preventing the death of the child from pressure on the umbilical cord, before its head is brought to the air, and the act of breathing thus permitted. For after the pulsations of the cord cease, the child must either breathe or die.

In this kind of presentation, therefore, the child's life is in great danger. After the birth of the lower half of the body, the cord experiences severe pressure, sufficient to interrupt if not wholly prevent its pulsations. It then becomes necessary to hasten the birth of the upper extremities and head by all prudent means. Violence is never in order in midwifery; but considerable force, skilfully directed, may sometimes be safely used. After the shoulders are delivered, the passage of the head may be facilitated by carefully pulling down the arms. Then, as soon as possible, introduce the finger into the mouth of the child. This will serve the double purpose, perhaps, of permitting a little air to make its way into the child's lungs, and of furnishing a hold by which its head may be gently drawn along into the world.

If there is much delay at this juncture, perhaps in some cases the child's life may be preserved by inserting into its mouth one end of a male catheter, — thus furnishing an open tube for the passage of air, until more vigorous pains shall introduce it into the full liberty of the atmosphere. While the head is yet undelivered, great care should be used to keep the child's body warm by covering it with flannel, and also to keep it in a correct relative position with the head. If the body be incautiously turned round, of course the neck will be twisted; and the child's subsequent delivery with a broken neck will be the miserable result, — bringing confusion to the medical attendant, and unhappiness to all concerned.

Arm or Shoulder Presentation. — If the arm or shoulder present, the child will probably have to be turned. In case this cannot be effected, its chest must be opened and emptied of its contents, that there may be room to bring down the head. It is barely possible to avoid a resort to art in this presentation.

Flooding or Hemorrhage, occurring to an alarming extent, is happily one of the rare incidents or consequences of labor. But when it does occur, it demands the most serious and prompt attention.

Profuse bleeding from the womb is most commonly owing to a partial separation of the placenta, or after-birth, from its attachment to the internal cavity; and it has recently been observed that the flow proceeds more rapidly from the detached portion of the after-birth than from the corresponding exposed surface of the womb. A knowledge of this fact has an important practical bearing; for if, in severe cases of flooding, the partially detached after-birth can be entirely separated, the bleeding will often be speedily arrested.

The most dangerous floodings occur in cases of *placenta previa*, when the after-birth is over the mouth of the womb. In such cases, when the labor commences, and the womb begins to open itself, the after-birth must of course be partially separated. These cases, unless promptly relieved by art, may prove fatal in a few minutes. Yet, there is ordinarily sufficient time, if it be improved, calmly to choose and pursue the proper treatment. If the flooding be immediately dangerous to life, the child must be turned and delivered, or the *tampon* or *plug* be applied, as directed under the head of abortion. This expedient is used when, through rigidity of the mouth of the womb, the delivery is inadmissible.

Before Delivery. — In all cases of flooding, we prescribe quiet, the recumbent posture, cold applications to the abdomen and the external genitals, and the internal administration of astringents and anodynes (152).

After Delivery, our object is to promote contraction of the womb by cold applications and frictions externally, or, if necessary, by the introduction of the hand into the womb, for the purpose of removing the after-birth, clearing out clots, or stimulating it to shut itself up for the expulsion of the offending substance. Until this contraction is secured, the plug should not be used, lest internal bleeding into the enlarged and expanded womb should be profuse, and fatally exhaust the patient.

After the Child is Born, our first duty is, if possible, to see that it breathes. In the vast majority of cases, the well-known cry, which salutes the ear, gives proof that the duty is unnecessary. But sometimes we fail to hear this welcome sound. The umbilical cord may be once or repeatedly wound around the child's neck, and must be immediately removed to prevent strangulation; or, the child's mouth may be filled with phlegm, or some sticky mucus, which must be poked out with the finger, and its exit favored by turning the face downward; or, after tedious labors, the child may be born in a very feeble state, and may need the stimulus of cold water thrown suddenly, in small quantities, upon its chest and body, with considerable rubbing, and perhaps the inflation of its lungs with air blown into its mouth.

Tying the Cord. — When breathing is established, a piece of narrow

tape or common twine is to be tied tight around the navel-string, about two inches from the child's navel, and the cord is then to be cut off, with a pair of sharp scissors, from half to three quarters of an inch outside the place where it is tied. The child is then to be delivered to the nurse.

Washing the Child. — The child is now, while the physician is attending to the mother, to be washed and dressed by the nurse. Its skin is at this time covered with a suet-like substance, called the *vernix caseosa.* To remove this, it should be washed all over gently with warm water and castile soap. It is not material that this coating should be absolutely all removed at the first washing; but the soap and water should be again gently applied in eight or ten hours from their first use. It is improper to use spirits for this cleansing. All rough rubbing must be avoided as injurious to the delicate skin of so tender an infant. Washing with cold water would lower the temperature to a dangerous degree, and should in no case be allowed.

Removal of the After-Birth. — The woman having rested fifteen or twenty minutes, a little gentle soliciting or pulling with the cord will generally bring away the after-birth. If, however, any serious obstacle prevent its expulsion, it may be slowly and cautiously taken away by the hand introduced.

Cleansing the Bed, and Applying the Swathe. — Upon the removal of the after-birth, a cloth is immediately applied to the external organs, a drink of water or tea is administered, and another rest of an hour or more allowed. The woman may then be conveyed to a neighboring bed, sofa, or easy-chair, for the purpose of cleansing the bed, adjusting her clothes, and applying the *swathe.* This last mentioned application may consist of a towel pinned snugly around the body, or of a cloth, cut and fitted exactly for the purpose. Its object is to afford a firm and steady support to the contracting womb.

If a chair is occupied while the bed is being arranged, it should be well tipped back, and the woman's feet supported on a high stool, as it is of great importance, so soon after delivery, to keep her either entirely or very nearly in the recumbent posture, to avoid dangerous floodings.

The Dressings for the Child's Navel should be so fixed that the navel-string or cord will not be left in contact with the healthy skin. To effect this, make a hole large enough to admit the cord in the centre of a piece of linen cloth four inches square; pull the cord through this hole, leaving the cloth lying flat upon the child's belly; then, having bandaged the cord down to the belly, fold the cloth over it, and apply the belly-band. The interposition of these dressings will thus keep the cord, which is dead and in process of decomposition, from irritating, and perhaps excoriating the living flesh, with which it must otherwise be in close contact.

Nourishment of the Child, etc. — After being dressed, the child should be kept next the body of the mother or nurse, that it may

receive the natural warmth thus to be derived. Its nourishment should be obtained exclusively from the mother's breast. If it is hungry, be sure and keep it so. There is nothing more appropriate than a hungry child all ready to take hold and exhaust the full and almost bursting breast on the third day, when the milk has come. Alas! How many children have been fed on sweetened water, and on milk and water, till they have lost all instinctive idea of, and all appetite for, nursing! and how many bowel complaints and broken breasts have been the miserable consequence! But meddlesome friends are afraid the "little dears" will starve; and therefore they must first be made sick by unnatural diet, and then for their cure be treated to that filthy, harsh, and indecent substitute for medicine, "*chamber-lye and molasses.*"

But it may be asked, "must not the child be fed at all, if it is hungry, and cries a great deal, and there is nothing in the mother's breast for it?" Such cases will be exceedingly rare, if the breasts have been properly solicited from the first by a hungry child. When they do occur, being themselves exceptions, their treatment must be exceptional; but, even then, only so far as is absolutely necessary. If fed at all, the child should not be fed to satiety, but as little as the circumstances will possibly permit. The great rule remains: keep the child as hungry as possible till the milk comes. When it has to be fed, imitate the mother's milk as nearly as possible in the preparation of the artificial diet. A little sweet cream, warm water and sugar, should be so mingled, that in warmth, richness, and sweetness, the mixture may closely resemble human milk.

Diet of the Mother. — For the first few days after confinement, the most appropriate diet for the mother is gruel, cocoa, rice-water, crust coffee, or some similar liquid nourishment. Different constitutions, however, need somewhat different management.

A woman naturally robust, and of full habit, should confine herself more strictly, and for a longer time, to this light diet, than one who is more slender and feeble. In some cases, weakly women require the juice of meat, and even wine or ale, as early as the second or third day. If she be subject to canker, or nursing-sore mouth, a generous diet is particularly serviceable. After the first week, she may gradually return to her customary diet.

Costiveness may be treated with the usual remedies. It was an old rule to give a dose of castor oil on the third day, when there is a little increase of excitement in the system, from the filling of the breasts. This is not always necessary, and in most cases an injection would be far better.

The Perpendicular Position. — During the first month, let the woman avoid being often or long on her feet. This is a very essential caution to avoid prolapsus, or falling of the womb, with all its attendant weaknesses and pains, and to ensure a good "getting up," with a sound womb, in the right place, and subsequent months of health and enjoyment.

Milk Leg.—*Phlegmasia Dolens.*—*Crural Phlebitis.*

The popular idea is, that in this disease the woman's milk has fallen into her leg, which has inflamed. This is of course absurd. As to the real nature of the complaint, there are various opinions,—some holding it to consist in inflammation along the sciatic, crural, and pubic nerves; others, that it is an inflammation of the lymphatics of the groin which causes it; others, that it is an inflammation of the crural veins. Probably this latter view is the correct one.

Symptoms.—The disease begins in from two to seven weeks after delivery, with pain in the lower bowel, groin, or thigh. The pain is more violent when the thigh is extended. In a day or two, the pain diminishes, and the limb begins to swell, frequently in the calf of the leg first, thence extending upward, but generally in the groin, and extending gradually down. The skin becomes entirely white, smooth, and glossy, does not pit when pressed, is painful to the touch, and is hotter than the skin upon the other limb. In connection with this local disease, there is general fever, with small and rapid pulse, thirst, etc.

Treatment.—The patient must lie flat upon her back, with the swelled limb placed upon pillows, or a bolster, raised so that the foot shall be a little higher than the hip, and then charged not to put her foot down upon the floor, until she is very nearly well.

Apply a narrow blister along the course of the crural vein. When this is removed take a large piece of flannel,—Dr. Meigs says an old flannel petticoat, with the hem and the gathers cut off,—and dip it in vinegar and *hot* water, equal parts; wring it out, and cover the whole limb with it. Put a piece of blanket or oiled silk over it to keep it from wetting the bed. Repeat this, and keep it up for six hours. When it becomes tedious to the patient, remove it, and bathe the limb with warm sweet oil, two parts, and laudanum, one part, and cover it with flannel. In two or three hours, return to the first application of hot water and vinegar. Continue this for five or six hours, and then take warm sweet oil and laudanum; and thus pass from one to the other until the inflammation is subdued, or, as Dr. Meigs says, till the calf of the leg can be shaken.

If the bowels are confined, let them be gently moved by some gentle physic (13) (14) (18) (25) (27) (41).

In many cases, diuretics and cathartics *combined* will be proper (302), or diuretics only (128) (130).

While the inflammation lasts, and there is fever, the tincture of veratrum viride must not be forgotten.

If recovery does not take place after the active inflammation has subsided, the limb should be bandaged from the toes to the groin.

Child-Bed Fever.—*Puerperal Fever.*

Few complaints more justly excite the dread of the practitioner than this. It cuts down woman at a time when she can least of all

be spared by her young offspring, and at a moment when she most excites the love and sympathy of her whole family. It is a terrible disease.

It consists of inflammation of the peritoneum or lining of the abdomen; also, frequently inflammation of the ovaries, of the womb, of the veins of the womb, or of the absorbent vessels of the womb.

Its symptoms have already been described, on page 277, under the head of inflammation of the peritoneum. The treatment is, likewise, there given. I may mention here, however, that an infusion of chamomile flowers is lately spoken of as a powerful means of preventing *suppuration* in this complaint.

There is a diversity of opinion as to whether this disease is contagious, though the best medical testimony seems now to be on the affirmative side of the question. The physician or midwife having a case of child-bed fever in charge, should not for some time attend cases of midwifery.

Nursing Sore Mouth.

Nursing women sometimes suffer terribly with this complaint. It begins with a scalding sensation upon the tongue, a pink color in the roof of the mouth, and a hot, watery discharge from the mouth. After a few days, small ulcers appear on the tongue, and in the throat. Costiveness is generally present; but when the ulceration extends to the bowels, diarrhœa occurs. It comes to an end upon weaning the child.

Treatment.—To relieve costiveness, give some gentle cathartic (12) (15) (25) (34) (36).

Iron in some of its forms and combinations is highly necessary (61) (71) (73) (349).

Gargles will frequently do much good (227) (229) (230) (235) (243) (244) (347) (350).

The diet must be simple, nourishing, and digestible, consisting of stale bread, potatoes, tender beef steak, roast beef, broths, etc.

Inflammation of the Breast.—Broken Breast.

Mammary Abscess.

The mammary gland, or gland which secretes milk in the human breast, consists of a number of ducts, passing inward from their termination in the nipple, and then spreading around like the roots of a tree, and terminating in minute glands. The mammillary tubes are straight ducts, ten or twelve in number, having their mouths at the centre of the nipple, dilating at its base into larger reservoirs, which extend some distance into the gland. (Fig. 142.)

When milk is first formed, after confinement, these tubes and reservoirs sometimes get so full and hard that they crowd and compress each other, making it difficult to remove the milk, and under these circumstances, the breast will inflame.

Symptoms. — The inflammation generally begins with a chill, followed by fever, and pain of a shooting kind, which is much increased by pressure. An examination will generally reveal a circumscribed, hard, and painful tumor, even before there is any redness on the surface. After a time, the swelling spreads, the skin becomes of a dusky red, is hot and shining, will frequently pit a little on pressure, and soon gives a sense of fluctuation. Upon the formation of matter, the fever is increased, the breast is enlarged, and there is local tenderness and throbbing pain.

Fig. 142.

This complaint may be caused by taking cold, irregularities in diet, or by mental emotion; but more commonly it is caused by accumulation of milk within the ducts.

Treatment. — These afflictions may generally be *prevented* by keeping the breasts well drawn. It is the duty of a nurse to look well after this matter, and see that the breasts do not get hard and distended with milk.

But when the inflammation has fairly set in, the first aim should be to prevent, if possible, the formation of matter.

Active purging should be resorted to at once (29) (32). Sweating should be encouraged by the tincture of veratrum viride. If the object be to prevent the formation of matter, cold lotions, or cold water compresses, should be used freely; but if two or three days have passed before active treatment, the suppuration will go on, and it is better to use *warm* applications. Dewees says warm vinegar is the most beneficial as well as the most comforting. Poultices and warm fomentations are much used. Some apply stimulating liniments, made of essential oils, etc. (195) (198). Leeches are often used with advantage. They should be applied, not upon the breast, but just below it.

During the progress of the disease, especially after the abscess is opened, the breast should be supported, and prevented from hanging down, by long strips of adhesive plaster carried below and around it By this means a gentle pressure is kept up by which the matter is more easily evacuated.

The breast should be opened with a lancet as soon as the abscess points, or fluctuation is discovered. Should the ulcer not heal, an astringent wash, as a weak solution of nitrate of silver (211) may be applied to it once or twice a day.

During the discharge of matter, the system of the patient should be supported by a nourishing diet, and by wine, tonics, etc.

Sore Nipples.

Women suffering from excoriated nipples are apt to keep the infant chiefly to the healthy breast, and only to apply it to the tender side for the purpose of obtaining present ease from the pain of over-dis-

tension. In this way the ducts remain always full, and are apt to get inflamed. Sore nipples, therefore, are to be attended to as much on account of the evils to which they lead, as of the suffering they directly occasion.

The excoriation of the nipples begins as a chap. This shows no tendency to heal; and the child's mouth being often applied, rubs off the skin around the crack, and this naked surface soon becomes an ulcer. These ulcers are sometimes only on the surface; at other times they are profound, going deep into the substance of the nipple.

Treatment. — These excoriations and ulcers might be easily healed, were it not that the newly-formed skin is apt to be continually rubbed off by the child's mouth in the act of sucking. Two things are therefore to be done, — to favor the healing, and to protect the tender part from renewed injury.

For the first object, a strong infusion of green tea or port wine may answer very well in ordinary cases. A little alum or borax, dissolved in rose water, or water (201) (202), is often used. A weak solution of sulphate of zinc, or sulphate of copper, or nitrate of silver (209) (211) But one of the very best articles is composed of glycerine and tannin (306).

To protect the teat from injury in the act of sucking, use a shield made of India rubber. When the infant is not at the breast, the nipple should be covered by a metal shield.

Whites. — *Leucorrhœa.* — *Fluor Albus.*

Though leucorrhœa is only a symptom of disease, — as I have stated on page 353, — yet I think, on further reflection, remedies should be given for it, and I accordingly insert them here.

If the discharge be of a ropy, tenacious character, one of the best remedies is a strong solution of nitrate of silver, used as an injection with a female syringe, once a day (254). Of this, not more than two teaspoonfuls should be used at a time; and great care should be observed not to stain the under-clothes with it. When the discharge is either yellow and thick, or lighter colored and watery, some one of the following (200), (202), (203), (207), (209), (220), (230), (232), (243), (244), may be used with advantage as an injection, twice a day. An infusion of the white pond lily, one ounce to the pint of water, or two drams of the fluid extract of the same in four ounces of water, makes a very excellent injection, which may be used twice a day. A very simple injection, and sometimes quite effectual, is a strong infusion of green tea.

Some one of the above remedies will generally afford some relief; but if whites exist in a somewhat aggravated form, they furnish evidence of some serious disease in the vagina, or neck of the womb, and the case ought to be submitted to a competent physician.

CARE OF CHILDREN AND THEIR DISEASES.

Pure Air. — The first want of a child is a plenty of fresh air; and this want never ceases to the end of life. Impure air kills thousands of infants. Out of 7,650 born in the lying-in hospital of Dublin, 2,944 were destroyed by impure air within two weeks after birth.

Children should be kept in the open air as much as possible, and in well-ventilated rooms when indoors. It is wrong, when infants are sleeping, to cover their faces with bed-clothes, or draw curtains around their cots, or to envelop their heads in blankets and shawls when carried in the open air.

The Skin. — The health of infants requires that their skin should be kept clean. Unless this is done they are liable to suffer much from cutaneous and other diseases. The skin of a new-born child is covered with a white, unctuous matter, called the *vernix caseosa.* It is injurious to let this remain for any length of time after birth. To remove this, Dr. Dewees recommends that the child be smeared with hog's lard, and then washed with soap and water. Dr. Eberle says, smear with yolk of eggs, and then wash with simple warm water.

The young child should be washed every day with warm water, — then, after a time, with tepid water, then with temperate, and finally, after it is some months old, with cold water. This, if persevered in through childhood and youth, will ward off a thousand ills and sicknesses to which the young are liable.

The Clothing of Children should be so adjusted as to give their limbs ample play, and should be thick enough to keep them *warm.* They ought to have flannel next the skin in winter, and cotton in summer. At the risk of wounding some nice people's feelings, I must add that the *fashion* of a child's clothes is not important.

The Food. — The natural and proper food of a young child is its mother's milk. To this it should be confined, unless prohibited by imperative circumstances, until a portion of the teeth are cut. When the mother cannot nurse her child, the breast of a suitable nurse should, if possible, be supplied. If the infant need any more food than is supplied by the breast, give cow's milk and water, sweetened with a little loaf sugar. The sucking-bottle, if used, must never be permitted to get sour.

Health of a Nursing Woman. — During nursing the greatest attention to health is required by the mother or the nurse. A woman of a consumptive constitution should never nurse an infant. Nourished at the breast of such a mother, the child, who has inherited her constitution, will be the more likely to fall a victim to her disease.

Passions of a Nursing Woman. — Let the woman who nurses a young child be careful of her passions. An irritable disposition, giving rise to gusts of violent passion, may so alter the character of the milk as to throw the child into convulsions. Grief, envy, hatred, fear, jealousy, and peevishness, unfit the milk for nourishing the child, and often cause the child's stomach to be much disordered.

The Diet of the Nurse should receive strict attention. It should be plain and wholesome, and the amount should never be excessive. Her drink should be simply water. She should take gentle daily exercise in the open air.

Weaning. — At the end of twelve months, the first set of teeth are generally so far cut that the child can manage most kinds of plain food; and it may now be taken from the breast. Should the teeth appear earlier, and the infant be healthy, it may be weaned even at the end of the tenth month. Never take the child from the breast in the midst of summer heat. A disordered state of the bowels, or cholera infantum, would be likely to be the result. The spring and the autumn are the proper periods for weaning.

If for some months, it have been accustomed to other food beside the milk of the mother, it may be taken suddenly from the breast. It must not have any amount of solid food it may crave immediately after weaning. It should still be kept, for some time, upon a simple, bland, half-fluid aliment, taken in moderate quantities, and at proper intervals. At first, the food should be bread and milk, boiled rice and milk, soft-boiled eggs, roasted potatoes and milk, oat-meal gruel, plain rice pudding, preparations of arrow-root, tapioca and sago, simple meat broths, mixed with crums of bread or grated crackers, or in which rice or barley has been well boiled. From this it may pass gradually to a more solid diet; though, until the age of puberty, the principal part of the diet should be milk, the farinaceous articles, and vegetables. Sugar has been thought to be injurious to children. It is not so. If taken moderately, at meal times, it is wholesome.

Whatever be the food allowed to children, it should never be taken in excess; and to prevent this, they ought not to take their meals alone; for they have very keen appetites, and if permitted to do so, they will generally form habits of gluttony. Three or four light meals a day is enough.

Their drink should be *water* simply, — nothing else.

If parents would observe these rules, and enforce them strictly, they would confer blessings upon their children greater than riches. They would send them into the world with health and good constitutions, and would save them from untold misery and an early death. Such a course would evince more love for their children than those weak

concessions which allow tea and coffee, and all sorts of food, in quantities to suit, which occasion early disorders of the stomach and bowels, and bring later derangements of the nervous system, with all its regrets and horrors.

Sleep of Children. — During the first period of its existence, an infant sleeps a large portion of the time. This is a wise provision of nature. It withdraws the young child, for a time, from those outward exciting agents, which would too much disturb the nervous system of so tender a being. Whenever a young infant is restless or wakeful much of the time, we may feel sure it has had too much food, or is in some way disturbed by it, or by tight clothes, or that some other cause is giving it uneasy sensations.

Its sleep should be the promptings of nature, and should never, except in rare instances, be brought about by opiates. It is wrong and sinful for a mother or nurse to put an infant to sleep with an opiate, merely that she may gain time for pleasure, or even for other duties.

The Infant should be kept warm while Sleeping. — During the first few weeks it should sleep with its mother, — especially if the weather be cold. After that, it may be in a cradle or cot. The covering should be warm, but *light*, so as not to press heavily upon its tender limbs. If laid upon its back, the fluid of its mouth and throat may get into the windpipe, and obstruct the breathing, or produce coughing. It is better, therefore, to lay the infant upon its side, — taking care not to produce distortion of the spine or limbs by always laying it upon the same side.

Children should not be allowed to sleep either with the aged, or with sick persons. It is not healthful for them to breathe the exhalations from the bodies of such. For a somewhat similar reason, some kinds of plants, and flowers generally, should be excluded from their sleeping rooms. Their beds should be so placed as to turn their faces away both from the sun-light which comes in at the windows, and from the artificial light in the room.

They should be taught to retire early at night, and to rise immediately after waking in the morning. This habit will be worth much to them through life. After the meconeum has passed, the bowels of an infant should be opened from two to four times in twenty-four hours. If the stools are less frequent than twice a day, or, if they are lumpy, some gentle cathartic is called for. From half a dram to a dram of fresh castor oil, or a dessert-spoonful of mixture (24) answers a good purpose. During *childhood*, the bowels should be moved once or twice a day. When a cathartic is required, a table spoonful of mixture (25), or a teaspoonful of (17), will be found very excellent.

Exercise. — During the first few weeks of an infant's life it requires but little exercise; indeed its organization is not sufficiently settled and compacted to permit much without injury. A little gentle rubbing with the hand over the whole body, is about all it needs or will

bear. To dandle and toss it about, and especially to set it upright, is injurious and wrong. Its bones are all soft, and will not endure to be much twisted about, and its spine is not stiff enough to bear up the weight of its head.

After a few weeks, riding in a carriage drawn by a careful and trusty nurse, is both a healthful and pleasurable exercise for children.

Learning to Walk. — At the end of the ninth or tenth month, a child may begin to learn to walk. It is not safe to teach it this exercise much earlier than this, as the bones, being soft, may be bent by the weight of the body, and the limbs be permanently deformed.

As soon as the child has learned to walk alone, it should be allowed perfect freedom of exercise. Thenceforward, the open air is its proper place during the day; and such an unrestrained use of its limbs as its own instincts may dictate, is its proper calling. For five years after it has learned to walk, it should do little else than to use its limbs out of doors, as it pleases. The books and the school-room will be in season after that. First compact the body, — then bring out the mind. The mind is of no use without the body, — the body must be developed first, or never.

Moral Treatment. — We charge upon nature many of the bad passions which we ourselves implant in children. The moral treatment of children is generally bad. We are apt to begin by either making them our masters or our slaves. Sometimes we do both, — allowing them to govern us for a time, and then, getting into a passion, or a mood for playing the tyrant, we turn upon, and govern them as if we were autocrats. We submit to their whims until we grow irritable, and then, by way of retaliation, we compel them to submit to ours.

This is all wrong. Children should be *governed always*, but with an even, a gentle, and a loving hand. They should early be subjected to habits of self-control, and of regularity in eating, and sleeping; and should be taught absolute and continued obedience. All this can be brought about only by firmness, self-control, and great gentleness on the part of the parents. If they would make a child cheerful and happy in its disposition, they must themselves be cheerful, and never let it see anger, passion, and fretfulness, marring their conduct. Nothing is more injurious to the health of a child than a peevish, complaining, and soured disposition; and these vices are seldom acquired, unless seen in the lives of parents.

How to Nurse Sick Children.

As the education of the young, whether religious, moral, or intellectual, is more important than that of adults, so is the care of their physical life of more importance. Death aims to "out-Herod Herod," and seeks the life of all infants, male and female, and in fact destroys one half of all below the age of five years.

But few know how to train and take care of children. It is a still more rare gift to know how to nurse them when sick. No persons

can properly nurse sick children who are in feeble health, or have fretful tempers, or are low-spirited; for they can neither endure the fatigue, nor bear the trials, nor hear the prattle which such a responsibility would bring. Some will manage a well child very well, who are not fit to have the care of a sick one; for there is a great difference between a child when well, and the same child when sick. When well, and full of fun, and frolic, and life, laughing, and jumping, and shouting aloud for very joy at being alive, it is an easy thing for a person of even a morose temper to attend upon them. But when sickness comes, and the child's playfulness is all laid aside; when it becomes so fretful that nothing goes right with it; when it cries to be laid down, and then cries to be taken up; stretches out its hand for drink, and pushes away the cup when it is presented, — apparently made more angry by your attempts to serve it; — when these things are repeated, day and night, until the nurse is weary and exhausted, and even a change of disease and amendment only brings a cross and fractious temper, it is only by possessing peculiar qualifications, that the nurse can maintain an even and unruffled disposition.

While passing through such scenes, it is hard for the nurse to remember that sickness does not destroy the little loving heart, but only hides its affection for a short time.

Signs of Disease in Children. — It is important that the nurse of sick children should know what to observe, and the meaning of the signs of disease. A baby has only cries to express its sick feelings. To one person, these cries mean no more than that the baby has *some sort* of illness. To another, with more experience and better powers of observation, they point to the head, or chest, or stomach, as the disorder. A baby with the stomach-ache, utters *long, loud, and passionate cries*, and *sheds tears plentifully.* Suddenly it stops for a moment, and then begins again, — drawing up its legs to the stomach, and as the pain passes off, stretching them out again, and with many sobs, passing off into a gentle sleep.

If there be inflammation in the chest, it *neither cries aloud, nor sheds tears*, but after every long breath, or hacking cough, it *utters a short cry, which is cut off before it is half finished*, — apparently because crying is painful.

If the disease be in the head, the cries will be *sharp, piercing shrieks, with low moans and wails between.* Or, there will be quiet dozing, interrupted by startling pains.

When a child is taken ill, whatever the disease which is impending, there is always a change of some sort, which soon attracts attention. It either loses its appetite, or is fretful, or soon tired, or sleepy, or restless, or thirsty, or has a hot skin, or, rather, has a number of these symptoms. It vomits, or is purged or bound in its bowels. It loses its merry laugh and cheerful look; it no longer watches its mother's or its nurse's eye, as before, but clings to her more closely, and will not be out of her arms a moment. If lulled to sleep in her arms, it wakes immediately on being placed in its cot.

Such symptoms often continue a day or two before it can be de-

termined what disease is impending. An intelligent nurse may do much towards solving the question. It is frequently proper at such times to place the child in a warm bath. When stripped for the bath, it should be carefully examined to see if there is any rash upon its body. If it be a rash from which it is about to suffer, the bath will help bring it out. The rash should be looked for at least every twelve hours, until the nature of the disease is determined.

The Appearance of the Different Rashes may be distinguished with a little care and experience. Measles has a number of dark red spots, in many places running into each other, and is generally seen first about the face, and on the forehead, near the roots of the hair, and is preceded by running at the eyes and nose, and all the signs of a severe cold. Scarlet fever does not show separate spots, but presents a general bright red color of the skin, much like a boiled lobster. At first there is more of it about the neck and chest than on the face, and it is preceded by a sore throat. Chicken pox is attended by fever, but not so much running at the nose and eyes as in measles, nor is there so much cough. The spots, too, are smaller, and are not so much run together; and they come out more over the whole body. They appear a few hours earlier on the body than elsewhere; and in a day or two they are found to be enlarged, and turn into little bladders of water as big as the head of a shawl-pin.

And now a few Words as to what should be Done in the sick-room of a child. The room should be kept *cool*, and its temperature should be measured by a *thermometer*. This instrument, when hung away from the fire, should show a temperature of about 55°. That is about the right degree of warmth. Sick-rooms are generally kept too hot. The room should be *darkened;* not made totally dark, but its light shaded down by closing the outside blinds, or by dropping the curtains, so as to give a kind of twilight; and the cot should always be so placed as to turn the little one's face away from the light. The room should be kept *quiet;* and this requires attention in the whole house, as well as among the persons in the room. Those present should never whisper, but speak in low and gentle tones, — should not walk on tip-toe, but move about carefully. There is a *fussy quietness* which disturbs the sick far more than noise. The child must be spoken to, and roused from its slumbers, and turned from side to side, and raised for its food or medicine, with a soothing tenderness, and a delicacy which never forgets itself.

In applying leeches or cold to a child, judgment is needed, to succeed well. The leeches should be put either behind the ear or on top of the head, so that the child cannot see them. Cold is best applied by means of a couple of bladders half filled with powdered ice, and wrapped in two large napkins; one of them should be placed under the child's head, the corner of the napkin being pinned to the pillow-case to prevent its being disturbed, while the other is allowed to rest upon the head, with the corner of the napkin again pinned to the pillow, to take off the greater part of its weight. In this way the child

will not be wetted, or irritated, as by the changing of wet cloths, nor will the cold applications get displaced by its movements.

A word should be said respecting the nursing of children in cases of lung-inflammation, — an affection from which they often suffer. The lungs are much like two large sponges, and the air enters them through the windpipe; and passing through smaller and yet smaller tubes, it comes at last into tiny cells, so small that they can only be seen by a magnifying glass. When the lungs are inflamed, some of the tubes become stopped up; and the very small cells are pressed on by the flow of more blood than natural to the part; and so the air enters less easily, and in smaller quantities, than it should. If now you let the child lie flat, it is not only less able to draw a deep breath, and fill the lungs, but the blood also flowing to the inflamed portion of the lung, returns less easily than if the child were propped up in bed. When a whitlow is on the finger, if the hand be hung down, the inflamed finger will become redder, and will beat and throb so as hardly to be endured, while, if the hand be raised, the pain will abate. The same increase of pain does not follow an accumulation of blood in an inflamed lung, because the lung is not as sensitive as the finger; but the consequences are very serious. The air-cells being more and more pressed upon, the admission of air is more and more difficult, until, at length, a large part of the lungs is rendered useless, and the child dies.

In this disease, the temperature of the room needs attention. The air should not be quite so cool as in other diseases. From 60° to 65° is about right.

Of course crying will irritate inflamed lungs, and it is all important that a child sick with this disease should be soothed and quieted as much as possible. Every good nurse knows how to do this better than any rules can teach her.

Sometimes sickness and vomiting, from which a child may suffer, are increased by want of judgment in giving food and drink. When there is nausea, the stomach will bear only very small quantities of food at a time, while cold drinks are almost always borne much better than warm. When there is nausea, it is best, for an hour or two, not to attempt to give any food or drink. After the stomach has been thus completely rested, give a single teaspoonful of *cold* water. If this is not thrown up, it may be succeeded, in ten or fifteen minutes, by a second or a third. If this is borne, give a little water thickened with isinglass, or cold barley water, or cold milk and water; and then, with the same precautions, and in very small quantities, beef tea, or chicken broth, or whatever else the doctor in attendance may direct. The smallness of quantity, the coldness of the articles, and the giving it without moving or disturbing the child, if possible, are the important points to be attended to.

It is of great consequence that children suffering from diarrhœa should have their skin kept very clean. The pores should be kept well open, so that the fluid matter which is passing off by the bowels, and through the mucous membrane or inner skin, may be diverted to the outer skin. In this disease, the skin of children is apt to become

irritable, or even sore. In these cases, soap and water are quite apt to increase the soreness, while a little starch, made as for use upon clean clothes, though much thinner, will, if used in place of soap, very much soothe the inflamed skin.

A child much exhausted by diarrhœa, or other disease, should be moved or lifted out of its cot or cradle as little as possible. Suddenly moving it when very weak, may cause fainting, or even convulsions. Let it be sponged and cleaned by merely turning it, with great gentleness, from side to side.

In such cases, too, the child should be supported with proper nourishment. When worn down by diarrhœa, its desire for food may be nearly lost. Though at one time it cried much, and seemed to suffer, it will, in this condition, grow quieter, and doze, and even sleep on for hours, appearing fretful only when roused. If, in such cases, the child be allowed to go without food because it does not seek it, or declines it when offered, it will sink into a deeper and deeper sleep, and finally into a stupor which will end in death. To give a little arrow-root, or wine, or broth, may now require trouble and perseverance; but it must be done, for upon it depends the child's life. The effort to administer food must not be abandoned because once or twice, or several times unsuccessful, for the food which is refused one minute, may be accepted five minutes after.

In the various rashes from which children suffer, there is a very general fear of washing the surface lest the rash be driven in. There is no ground for this fear, unless it be in measles; and even in this complaint, there is no danger if luke-warm water be used. If only a small part of the body be sponged at a time, there is nothing to fear even from frequent washing; and the passing of a wet sponge frequently over the surface is a great comfort when the skin is burning with fever. The same remark applies to the changing of the linen. The same kind of objection, and with no better reason, is often urged against cold water in fevers, though it is most refreshing, and if taken in small quantities, and often, never does harm, but often much good.

The Warm Bath. — The best method of giving a child a warm bath is a matter of importance. There should be as little parade about it as possible. If the child sees the bath prepared, is taken out of bed, undressed and put into it smoking before its eyes, it may be much alarmed, and cry so passionately as to be really injured by it. The bath should be prepared out of its sight, and brought to the bedside with a blanket spread over it to hide the steam. The child should then be laid upon the blanket, and gently let down into the water, and then set to play with a couple of corks with feathers stuck in them.

Inflammation of the Mouth.—*Erythematic Stomatitis.*

This is a simple inflammation of the mucous membrane of the mouth; and is very common during infancy. It may be confined to the tongue, or spread over the whole mouth. It is sometimes very

severe, going down into the gullet and stomach, and into the windpipe. It occasions redness and pain in the mouth, and fretfulness of the infant, — causing it to quit the nipple suddenly when sucking. A frequent result of this inflammation is the secretion and exudation upon the surface, of a white, matter-like curd. It appears in small points and patches. This is the *thrush*, or what nurses call *children's sore mouth*. It is commonly confined to the period of suckling.

Treatment. — For the simple inflammation of the mouth, a wash made by infusing the inner bark of slippery elm in water, answers a good purpose; and in more severe cases, a wash made of sugar of lead (227) will be found useful.

In some mild cases of curdy exudation, this last wash will do well, if united with the daily use of the warm bath, and proper care of the diet. But in the more severe cases, a little pulverized borax and white sugar or honey (274) (275), placed occasionally on the infant's tongue, will do good service. A decoction of equal parts of blue cohosh and golden seal is a good remedy. When the curdy patches are large, touch them with a mixture of hydrochloric acid and honey (276). If the exudation have a look as if mortification were taking place, use a wash of chloride of lime (228), or chloride of soda, etc. (229), or creosote and mucilage (230), or alcohol and vinegar (231), or nitrate of silver (211). When diarrhœa is present, with acidity, give (26). In the more severe cases, when appearances of mortification are seen, quinine (69) should be administered.

Follicular Inflammation of the Mouth. — *Apthæ.*

This disease attacks the little glands of the mouth, called follicles, and appears about the time of cutting teeth. Small white specks, a little elevated, first show themselves on the lips, insides of the cheeks, and under side of the tongue, etc. The specks enlarge, a whitish, curdy matter flows out from their centre, and ulcers are formed, with elevated edges, surrounded by a red, inflamed circle. Sometimes, instead of curdy matter, a bloody exudation takes place, and dark-colored crusts are formed which are mistaken for mortification. In bad cases, there is great restlessness, with hot mouth, dry skin, thirst, and diarrhœa, with green stools, and sometimes salivation.

Treatment. — The milder forms of this disease are treated like simple inflammation of the mouth. If there is thirst, give several times a day, a spoonful of cold water, with a little gum arabic dissolved in it. If the child be weaned at this time, its food should be barley or rice-water, sweetened with loaf sugar. An occasional dose of magnesia, with or without a little rhubarb, will remove the acid which abounds in the bowels. After ulceration has taken place, borax (274) will do well. When watery discharges from the bowels, and griping pains appear, preparation (28) should be used. If the strength be reduced, give (69).

Inflammation of the Gums.— *Gengivitis.*

During the cutting of teeth, the gums are apt to be inflamed, red or livid, swelled and painful. The child is languid, with a hot and dry skin, small and quick pulse, little appetite, much thirst, and a tongue covered with a thick, yellowish fur. When ulceration takes place, and is allowed to go on, the teeth become loose, black, and rotten, and often soft and pulpy; a flow of fetid spittle takes place; the breath of the child becomes offensive, and its countenance pale and sallow. The gums bleed under the least pressure, and a profuse diarrhœa fills up the list of ills.

Treatment. — In the first stages, mild washes to the gums, such as (227), will do well. Clear out the bowels once with magnesia and rhubarb (26). After ulceration has taken place, use oak bark (232), or chloride of lime (228), or diluted hydrochloric acid (233). A daily tepid bath. If the strength be reduced, use an infusion of Peruvian bark, or quinine (69).

Gangrene of the Mouth.—Canker.— *Cancrum Oris.*

This disease attacks weakly children, of a lymphatic temperament, and having inflamed gums. It often follows intermittent, remittent, or bilious fever, and is also frequently connected with disease of the stomach and bowels.

Symptoms. — It is attended with languor, listlessness, indisposition to play or move about, thirst, loss of appetite, peevishness, and inability to sleep. The countenance is pale and sunken, and there is a peculiar puckering of the cheeks about the corners of the mouth. The breath is bad, the gums have the appearance of salivation, the teeth become loose and fall from their sockets, or, if they remain, they become covered with a thick coating of a dirty white or ash color. A few ash-colored water pimples appear upon the gums, which enlarge, run together, and finally break, — presenting a black appearance of mortification. The gangrene, sooner or later, goes to the lips and cheeks.

Treatment. — When bowel complaints exist, they are to be treated with the usual remedies, such as (70) or (156). If there be active inflammation of the gums, at first, leeches may be applied, after which, the inflammation being subdued, a wash of oak bark (232), will be in place, with quinine given internally (69) to ward off the mortification. As a wash, too, a strong solution of sulphate of copper (234) is excellent, — so is white vitriol (235), and nitrate of silver (219), and creosote (236).

The diet should be beef-tea, plain beef or mutton broth, with rice, milk and rice, tapioca, sago, and the like.

Difficult Teeth-Cutting.

Teeth-cutting generally begins between the ages of five and seven months. It is indicated by redness, heat, and tenderness of the gums, an increase of saliva, and, occasionally, redness of the cheeks, watering of the eyes, thirst and fever, with fretfulness, disturbed sleep, and more frequent motions of the bowels, a little more fluid than usual, and sometimes of a greenish hue. As the tooth comes near the surface, the child holds its fingers in its mouth, and presses the gums harder upon the nipple when sucking. Beside these milder symptoms, there are sometimes ulceration of the mouth, gangrene, extensive and long-continued diseases of the bowels, — and even disorders of the brain, convulsions, and palsy.

Treatment. — Watch the gums, and the moment they are swollen by the teeth pushing them up, lance them at the elevated points, cutting entirely down to the advancing teeth, — so that no tough membrane shall cause pain by impeding their growth. These incisions often prevent fatal disease of the brain, and sometimes almost instantly relieve the most threatening symptoms. Before the teeth are far enough advanced for lancing, some soothing wash may be applied to the gums, or a leech or two to the angle of the jaw. For obstinate diarrhœa, with watery stools and griping, use prescription (157). If the child be drowsy and starts from sleep, and has heat and redness, with enlargement of the blood vessels about the head, put three or four leeches behind the ears, and make cold applications to the head. At the same time, open the bowels with castor oil (17). When there is difficulty of passing the water, give flax-seed tea; and if the pain be considerable, an opiate (351).

Croup.

This is one of the scourges of childhood. In ten years previous to 1845, no less than 1150 children were destroyed in Philadelphia by croup. During the year 1840, the large number of 4,336 died of the same disease in England.

Croup is an inflammation of the mucous membrane of the larynx and windpipe. It causes to flow out upon the surface of the membrane, a peculiar fluid, which stiffens into a membrane, or skin-like substance, and adheres to the inner surface of the wind-pipe, and sometimes extends through the whole of the bronchial tubes. This is *membranous* croup, — the worst and most fatal form of the disease. Dr. John Ware of Boston has shown that there are other forms of croup, not so fatal, because not attended by the formation of a membrane upon the mucous surfaces.

The Symptoms of croup are, difficulty of breathing, hoarseness, and a peculiarly loud and ringing cough, with fever. In the membranous and worst form of the disease, the breathing is not, at first, so laborious, and the symptoms generally not so violent and alarming as in

the less fatal but more inflammatory type. This latter kind, though generally causing great alarm, like a highway robber, by the sudden fierceness with which they seize the throat, are yet much less fatal, and of course less to be feared, than the membranous form. The disease is pretty much confined to children between the ages of one and eight years.

Treatment.— The old and usual mode of treatment is first to bleed, and then to place the patient in a warm bath; and, after the child is returned to the bed, to give nauseating doses of tartar emetic (105). In Boston, this treatment is now nearly discarded, as being too active, and possibly a cause of evil rather than good. The following is a safer and more successful treatment.

Give, every three hours, Dover's powder and calomel (352). Sponge the neck often with water, and apply a liniment (192). It is sometimes proper to give a gentle emetic,— say, two drams of wine of ipecac. A flax-seed poultice applied to the neck is also excellent. If the child be large enough, let it inhale frequently from an old tea-pot, the vapor of hot water and mullein leaves; and if it be too young to do this, keep the room full of watery vapor, by throwing water upon hot bricks. If the bowels need moving, give a dose of castor oil (17). In addition to these measures, a strong solution of nitrate of silver (219) should be thrown into the throat with one of my laryngeal shower syringes, and repeated every two hours till the membrane is discharged.

Spasm of the Glottis.—*Laryngismus Stridulus.*

This disease consists in a sudden shutting up of the glottis, or passage to the windpipe, which creates a feeling of strangulation, and a difficulty of breathing so great that the drawing in of the breath causes a peculiar crowing sound. There is no fever. The child, upon taking food or drink, or upon being irritated or teased, is taken suddenly with an impossibility of drawing in its breath. After struggling convulsively for a time, its head thrown back, its nostrils dilated, its mouth open, its eyes rolled up, its face pale, its legs and arms stiff, it begins to breathe with a shrill crowing sound. The disease is sometimes mistaken for croup, and for hooping cough. It is strictly spasmodic in its nature.

Treatment.— During the paroxysm, set the child in an upright posture, with the head leaning forward, exposed to a full draft of cool, fresh air, and sprinkle cool water upon the face. Let nothing be tight about the neck. Slap the child slightly on the back, and apply friction along the spine. If these means do not succeed, place it in a warm bath; while in the bath, sprinkle cold water on the face.

When the fit is over, examine the gums. If they are swollen, lance them down to the coming teeth. The bowels should be moved daily with some gentle physic, but not irritated by severe purging. If the stools are light colored, use prescription (142), with warm water injections.

Hooping Cough.—*Purtussis.*

This is a contagious disease, peculiar to childhood, and occurring but once in the same individual. It is characterized by a convulsive, paroxysmal cough, which is attended by long-continued hissing, convulsive breathing, with rattling in the windpipe, which is succeeded by several short efferts to expel the breath, following each other in quick succession. The long, convulsive breathing, attended by the hooping sound, is immediately repeated; and these paroxysms continue until a quantity of thick, slimy, ropy mucous is thrown up, by expectoration or vomiting, when the breathing is again free. These paroxysms have all the appearance of impending suffocation, redness of the face, shedding of tears, sweating about the head and forehead, and such agitation of the whole body that the child lays hold of something for support. Blood sometimes starts from the nostrils, and the child involuntarily passes water, or evacuates the bowels. In spring and autumn, the disease most prevails. It is not generally dangerous.

Treatment.—First give an emetic,—say, two drams of wine of ipecac. Afterwards, give small doses of ipecac and sulphur (277). From six to fifteen grains of sulphur alone, three times a day, is an excellent remedy. A liniment of olive oil, oil of amber, etc. (193), applied to the spine, is useful. Belladonna (278) is a good remedy. Prussic acid (96) is strongly recommended by many, and is worthy of a trial. Lobelia (106) is a valuable remedy. Alum (279) is well recommended. Sulphuric ether, a little being spilled in the nurse's hand and held to the child's nose, generally shortens the paroxysm, and frequently abridges the disease. A solution of nitric acid in water, as strong as lemon juice, and sweetened, is a very valuable remedy,—breaking up the disease in two or three weeks. The child may drink it freely, a little further reduced with water.

Looseness of the Bowels.—*Diarrhœa.*

Infants and chilhren are more liable to diarrhœa than adults, and this is the reason for speaking of the disease here as well as elsewhere. It may be caused by inflammation of the stomach and bowels, by irritation produced by too much or improper food, by cold and damp weather, or by teething. The discharges from the bowels may be more or less thin, of a dirty-white color, of a curdled appearance, and acid smell, or they may be watery, yellow or green in color, and often mixed with blood. Sometimes they are mixed with portions of undigested food, are very acid, and when the looseness has been caused by unripe vegetables and fruit, in a state of fermentation, like yeast. At other times, especially while teething, they are a kind of thick mucus, like jelly.

If pressure on the bowels causes pain, the diarrhœa is the result of inflammation. When the disease has become chronic, the skin is dry,

harsh, and discolored, the face wrinkled, looking yellowish, dirty, and old.

Treatment. — First, regulate the diet. This is very important. In the case of older children, take away every kind of solid food, as well as pastry, confectionery, sweetmeats, and fresh vegetables. Give plain boiled rice and milk, — sometimes boiled milk, — water gruel, crackers and milk, tapioca, etc. At the beginning of the attack, give some mild physic, as castor oil, or syrup of rhubarb. A warm bath at this period is excellent. If the discharges are very sour, dissolve a teaspoonful of bicarbonate of soda in half a tumbler of water, and give a teaspoonful every hour, or the same amount of lime water, mixed with an equal quantity of new milk, or prepared chalk and ipecac (158), some slight astringent being used also (159). But better than all other astringents for this complaint, is a decoction of the cranesbill or spotted geranium, with milk, or of the bark from the root of the common blackberry which is armed with strong prickles.

The Summer Complaint of Infants. — *Cholera Infantum.*

This is confined to the North American continent. It occurs in large cities during the hot season. Its subjects are infants between the ages of four and twenty months, — occurring most frequently about the time of cutting the first teeth. It is one of the most fatal diseases of infants.

Symptoms. — It begins with a profuse diarrhœa, — the stools being green or yellow, or more often light colored, and very thin. The stomach soon becomes very irritable, — rejecting everything with violence. In some cases, vomiting and purging set in, — the discharges from the bowels being without color or smell. The infant rapidly loses flesh, and is soon reduced to great languor and prostration. The pulse in the beginning is quick, small, and often tense. The tongue is covered with a white, slimy mucus. The skin is dry and harsh. The head and belly are hot. The feet and hands are either of the natural temperature, or cold. There is great thirst, and towards evening, fever. The belly is often a little swollen, and tender to the touch. Occasionally there is delirium, as indicated by wild and bloodshot eyes, violent tossing of the head, and attempts to bite and scratch the nurse.

Treatment. — If possible, remove the child at once from the impure and heated air of the city to the cooler and purer air of the country. If this cannot be done, keep it in as large and dry a room as can be had, and take it often into the open air, in clear weather. Confine the infant entirely to the breast, or, if weaned, let its food be tapioca, pure arrow-root, rice flour, and milk, and put it daily in a warm or tepid bath, according as the skin is hot or cold. Give it gum-water, or rennet whey, with a little gum arabic added to it.

These measures, if used early, will often cure the disease, without medicine. If the vomiting be obstinate, camphor and sulphuric ether

(280) will generally give relief. When everything else fails, in relieving the sickness, sugar of lead (160) is generally successful. When the vomiting is stopped, the most prompt remedy for the disordered bowels is the compound syrup of rhubarb and potassa. When the disease has become chronic, treat it the same as children's diarrhœa. But if the discharges are sour, offensive, and dark colored, pulverized charcoal (42), with tartrate of iron (71), will be suitable remedies. Rhubarb, leptandrin, etc. (28), will often answer a good purpose.

Colic.

Infants are very much subject to colic, from over-feeding and consequent acidity of the stomach, from giving them solid food at too tender an age, and from some improper thing ate or drunk by the mother or nurse. They often suffer intensely from these pains, tossing their legs up and down, and screaming vehemently. When it arises from costiveness, the bowels are often hard and swollen.

Treatment. — When it arises from costiveness, give an injection of a tablespoonful of castor oil, and an ounce of warm infusion of peppermint or spearmint. At the same time, administer internally an infusion of one of the same herbs, with a small portion of bicarbonate of soda dissolved in it, and sweetened with loaf sugar. Or, if the bowels need to be acted upon, the syrup of rhubarb, or the sweet tincture of rhubarb, with a little soda in it, will do well. Paragoric generally brings relief, but should not be used, if simple carminatives will answer the purpose. Children are often relieved by covering them with a hot flannel, laying them upon the belly on the knee, and trotting them, at the same time tapping them gently upon the back. This should be done cautiously; for if unsuccessful, it might increase the suffering; and the infant has no language but screams to tell its distress.

Falling of the Bowel. — *Prolapsis Ani.*

In cases of long-continued looseness, the lower bowel of children sometimes gets so weakened, that it drops down, and projects through the fundament. Occasionally, only the mucous membrane which lines it comes down, in the shape of a small tumor, causing a sense of bearing down and smarting. These fallings-down occur when the child goes to stool. Whether it be the bowel or the lining membrane which has come down, if it be allowed to remain long down, inflammation will take place, and to return it will then be very difficult.

Treatment. — Place the child upon his back, and, having smeared the thumbs, or fore fingers, with lard or sweet oil, press them gently upon the tumor in such direction as shall tend to return it within the body. If this does not succeed, push the forefinger into the gut, so as to relax the circular muscle which contracts upon and holds it. If the falling is caused by straining at stool, made necessary by costive-

ness, some ripe fruit stewed in molasses, or rye hasty-pudding and molasses, should be given to the child daily, and it should be caused to empty the bowels while standing up. To strengthen the bowel, few things are better than cold water, applied to the fundament several times a day. An astringent wash of oak bark (232), is also valuable. Should the bowel become so much relaxed that these means fail, a tight bandage must be applied to support the fundament. Be careful that some ignorant pretender does not, — as has happened, — apply the ligature or the knife, and cut off the tumor, instead of returning it into the body.

Gastric Fever of Infancy.

The inflammatory affections of the bowels, which happen after teeth-cutting, are frequently accompanied by remittent fever, — the fever showing itself very distinctly towards evening, and subsiding, or nearly disappearing, in the morning. It is a sympathetic fever, and is generally the result of a reaction produced by inflammation of the stomach, or ileum, or colon. The attack is sometimes sudden, though generally gradual.

Symptoms. — For several days, the child will be languid and fretful, with loss of appetite, increased thirst, and some heat of skin. Towards night these symptoms are more intense; the skin is more hot, the thirst and restlessness are greater, the pulse more rapid. In the morning, the skin is more moist and cool, and the child falls into a short, disturbed sleep. Early in the attack, the bowels are constipated, — though there is sometimes diarrhœa, or a frequent desire to go to stool without much being passed. The evacuations are always unnatural and very offensive. They are dark-colored, or clay-like, or of the consistency of tar, — sometimes mixed with mucus, and occasionally with blood. There is tenderness of the belly, and pressure upon it causes pain. It is also hot to the touch, while the feet are cold. The face is flushed, and the breath has a decidedly sickly smell. The stomach is irritable, and vomiting is frequent. The tongue, after a time, becomes coated, dry, and pointed.

In the chronic form of the disease, there is, frequently, diarrhœa, the passages being unhealthy and fetid; the tongue is covered with a brownish-yellow mucus, the teeth with sordes; the lips are parched and cracked; the urine is scanty and high-colored, with a white sediment; the skin, dry, harsh, and dirty-looking; the countenance contracted and wrinkled; and there is, frequently, a dry, hacking cough.

Treatment. — Regulate the diet. This is important. In recent and acute cases, withhold all food, except some cold mucilaginous fluid as drink, as rice-water, gum-water, infusion of slippery-elm bark, or milk diluted with barley water. Give a warm or tepid bath daily. Purgatives should be used *sparingly.* The bowels, when costive, had better, generally, be opened by injections of tepid water, or thin gruel. If any laxative be used, let it be the compound rhubarb powder, or

either of the following, (28) (281). When the discharges have become healthy, and the tongue clean and moist, some light bitter, as the infusion of Peruvian bark, or colombo, in combination with diluted sulphuric or hydrochloric acid, may be given. These, carefully given, with the daily tepid bath, and exercise in the open air will soon restore the strength.

Mesenteric Disease.

This attacks scrofulous children between the ages of three and ten years. Its symptoms are a prominent belly and loss of flesh, — particularly upon the arms and legs. To be able to feel the enlarged and hardened glands, through the walls of the belly, is the surest sign of this disease. When the complaint is long-continued, the child loses all its flesh, and dies in almost a complete skeleton state.

Treatment. — If there is inflammation or other disorder in the stomach or bowels, attend to this first. Then put the patient on a generous diet, such as meat broths, etc. Give bicarbonate of potassa, dissolved in the infusion of columbo or quassia, and when there is costiveness, add rhubarb to the preparation. For the enlargement of the glands, apply, externally, an ointment (184) of the iodide of lead, or of the iodide of potassium (185). Give an ioduretted bath, daily, which is formed by adding one grain of iodine and two grains of iodide of potassium to each gallon of warm water.

The syrup of iodide of iron should be given, internally, three times a day, in a little water, or the iodide of potassium, and compound infusion of gentian. Daily sponging the body in salt and water, and exercise in the open air, are important.

Rickets.

This is also a disease of scrofulous children. By some bad process of nutrition in such children, there does not enough phosphate of lime enter into the bones to harden them, and the weight of the body, or the pulling of the muscles, or the pressure of the clothing, bends and distorts them in all manner of ways. The heads of the thigh bones are pushed nearer together, making the lower belly narrow; the back bone is so curved as to lessen the height; the shoulder blades stand up like wings when flying is contemplated; and the shoulders are so lifted up that the head seems only a little higher than the elevations on each side.

Treatment. — A good, generous, wholesome diet, properly regulated; out door exercise; the tepid or cold salt water sponge bath, with friction, and but little medicine. The hypo-phosphite of lime, in two-grain doses, given in a little sweetened water, three times a day, or the syrup of the hypo-phosphites, in half-teaspoonful doses, three times a day, may be given with advantage.

The Blue Disease.—*Cyanosis.*

This disease is known by a blue, purple, or leaden tinge over the whole body. The warmth of the body is reduced, there is difficult breathing, which is increased by quick motion or by crying. The disease is generally fatal. The blueness is occasioned, either by the passage between the right and left side of the heart remaining open after birth, so as to let the blue, venous blood run through and mix with the red arterial blood, thus making the whole blue, or by the obstruction of the pulmonary artery, which withholds the blood from the lungs, and does not allow it to be arterialized and reddened. This latter opinion is the more general one now.

Treatment. — Keep the patient, as much as possible, in a state of rest, so that the circulation may not be hurried. Allow a pure fresh air, easily-digested food, and protect the body from cold and dampness. Hold the infant near the fire, and apply gentle friction over the head and body with a warm, soft cloth.

Fits.

Most persons have seen a baby in fits; and it is a sad sight, — its little face all distorted and livid; its eyes rolling and squinting frightfully; its hands clenched, and arms bent, and legs drawn up, and body arched backward, and limbs twitching violently, — itself insensible, and unable to see, or swallow, or move. After a time, the fit ceases, sometimes by degrees, at other times suddenly, — the child fetching a deep sigh, and then lying quiet and pale, as if it had fainted. From this state it passes into a sleep, and, on waking, some hours after, seems quite well.

Fits may attack a child which is apparently well, and kill it immediately, or it may have fits daily, or even several times a day, and linger on for weeks. A child may have fits from a great variety of causes. Fits, therefore, have a different meaning in different cases. But they *always* show that the brain has in some way been disturbed.

Treatment. — As fits are not a disease in themselves, but only a *symptom* of some disease, the treatment must have reference to the cause. Sometimes, while the fit lasts, it is wise to do nothing. But, if a fit come suddenly, in the case of a child previously healthy, it is generally safe to place it in a hot bath, and at the same time, to dash cold water on its face, or to pour cold water on its head, or hold on it a large sponge dipped in cold water. The hot bath will draw the blood to the skin, and away from the over-loaded brain. It will quiet the disturbance of the system, and if scarlet fever or measles are about to appear, it will bring them out.

DISEASES OF THE GENERAL SYSTEM.

Having now treated of those disorders which affect the skin, the brain and nerves, the throat, the lungs and their appendages, the heart and its covering, the abdominal cavity and its lining membrane, the sexual organs, and those complaints peculiar to females and children, it remains to speak of those others, — fewer in number, — which are not specially developed in any particular part, but disturb the whole system.

Fever.

Fever is a disease which affects the system generally, and is characterized by more or less excitement of the circulation, increased heat, diminished strength, and, oftentimes, unnatural thirst. The degree of excitement is measured by the state of the pulse. Of this state, there are two characteristic indications: namely, *frequency* and *hardness*. A pulse is *frequent* when its rapidity exceeds that of health; it is *hard* when its stroke resists the pressure of the finger with unusual force.

In health, the pulse of an adult beats from sixty to eighty times in a minute; that of children is more frequent. The pulsations of the heart of the unborn infant, as heard through the body of the mother, are one hundred and fifty in a minute. After birth, the pulse varies from one hundred and forty down to the standard of adult age. To appreciate *hardness* of pulse, experience is absolutely necessary.

The great activity of the circulation, in fever, is intimately connected with the heat and thirst, and tends directly to waste the energies, and consume the strength of the patient. The *heat* of fever lessens or dries up the secretions, or different fluids of the body, which, in a state of health, are separated from the blood for various purposes. This is the cause of the dry skin, scanty urine, etc.

A *crisis* of fever is that period in its *course* when unfavorable symptoms give place to those of returning health.

A *course of fever*, or, in common language, a *run of fever*, is distinguished by a great variety of symptoms, which will be more particularly spoken of in the pages which follow.

Typhoid Fever.

Of the different kinds of fever, this is one of the most common and widely prevalent. The name *typhoid* is from two Greek words which mean *like typhus*, or *similar to typhus*. The word *typhus*, from a Greek word signifying *stupor*, means *stupid*, *dull*, or *low;* and, when applied to a fever, implies that it is *low*, or characterized by great *nervous depression*.

Typhus and typhoid fevers, if not identical, are so similar in history and treatment as to make unnecessary their consideration under separate heads. The following is one of the differences claimed to exist between the two: namely, in *typhus* fever, the belly is flat; there is no marked disease of the bowels, and generally no diarrhœa until the second or third week. In *typhoid* fever, on the contrary, some small glands, called *Peyer's glands*, situated in the lower part of the small intestines, are always inflamed, and sometimes ulcerated; and, consequently, among the symptoms most frequently noticed, are diarrhœa, and drum-like swelling of the belly, called tympanites.

Symptoms. — The disease often has precursory symptoms. For several days before its actual beginning, the patient droops. He may attend to his various duties, but does not seem well; he is low-spirited and languid; is indisposed to any exertion of body or mind; has pains in the head, back, and extremities; loses his appetite; and although dull and perhaps drowsy in the day time, his sleep is interrupted and unrefreshing at night. The immediate harbinger of the fever is a *chill*, often so marked as to cause violent shivering.

The history of the first week shows increased heat of the surface; frequent pulse, ranging from eighty to one hundred and twenty; furred tongue; restlessness and sleeplessness; headache and pain in the back; sometimes diarrhœa and swelling of the belly; and sometimes nausea and vomiting.

The second week is frequently distinguished by an eruption of small, rose-colored spots upon the belly, and by a crop of little watery pimples upon the neck and chest, having the appearance of minute drops of sweat standing on the skin, and hence called *sudamina*, or *sweat drops;* the tongue is dry and black, or red and sore; the teeth are foul; there may be delirium and dulness of hearing; and the symptoms generally are more serious than during the first week. Occasionally, at this period, the bowels are perforated or ate through by ulceration, and the patient suddenly sinks.

If the disease proceeds unfavorably into the third week, there is low muttering and delirium; great exhaustion; sliding down of the patient towards the foot of the bed; twitching of the muscles; bleeding from the bowels; and red or purple spots upon the skin.

If, on the other hand, recovery takes place, the countenance brightens; the pulse moderates; the tongue cleans, and the discharges assume the appearance they have in health.

Treatment. — Give the patient good air, and frequent spongings

with water, cold or tepid, as shall be most agreeable to his feelings. Keep the bowels in order; by which is meant, be more afraid of diarrhœa than of costiveness. Diarrhœa should be restrained by a little brandy, or by small and repeated doses of Dover's powder (153).

For costiveness, give injections, or the mildest aperients (7) (10) (12).

To lessen the frequency of the pulse, reduce the fever, and produce perspiration, give from three to ten-drop doses of the tincture or fluid extract of veratrum viride, every hour. This remedy has great power in fever.

Great wind-swelling of the bowels may be relieved by fomentations, or hot, steaming applications. Sometimes the wind may be let off by introducing into the bowels a long gutta percha tube, — thus reducing the swelling, and greatly promoting the patient's comfort.

If pain in the head be severe and constant, let the hair be cut short, and the head be frequently bathed with cold water.

Let the strength be supported by light nourishment; and in case of bleeding from the bowels, or great debility, by broth and wine.

For foul mouth, the weakest possible infusion of old hyson tea is valuable. Good nursing is eminently desirable.

If the fever runs a low course, the patient being much prostrated, quinine, even in large doses, may be given from the beginning.

Bilious Remittent Fever.

There are three principal varieties of *periodical fever*, which, though varying considerably from each other, in several particulars, are yet essentially, in their substance, but *one disease*. These are *Bilious Remittent Fever*, *Pernicious Intermittent or Congestive Fever*, and *Ietermittent Fever* or *Fever and Ague*. According to the custom of most writers, I shall treat them separately, beginning with Bilious Remittent Fever.

Symptoms. — The attack is generally sudden and well marked. Some writers say it has no premonitory symptoms; others, that it has. The more general understanding is, that for a day or two, or even longer, before the onset, there is a sense of languor and debility, slight headache, lack of appetite, furred tongue, bitter taste in the mouth in the morning, pains in the joints, and general uneasiness.

The formal onset is nearly always marked by a distinct chill, or rigor, — sometimes slight and brief; at other times severe and prolonged. The chill may begin at the feet, or about the shoulder blades, or in the back, and thence run like small streams of cold water poured in every direction through the whole body. There is *generally* but one well-marked chill, the returns of the paroxysms of fever being seldom, after the first, preceded by the cold stage.

At certain periods of the day, there is an increased intensity in the symptoms of the disease, occasionally preceded, though generally not, by the chill. Between this period of severity in the feverish symptoms, and a similar period which follows it, there is generally decrease

in the violence of the symptoms, during which the fever moderates, but does not, as in fever and ague, entirely go off; has distinct *remissions*, but not complete *intermissions*.

During the hot stage, the pulse is up to one hundred and twenty, or one hundred and thirty. There are pains in the head, back, and limbs, of a most distressing kind.

The tongue is generally covered with a yellowish, or a dirty-white fur; and in bad cases, in the advanced stage, is frequently parched, brown, or nearly black in the centre, and red at the edges. There is no appetite for food, and generally nausea and vomiting; and usually there is pain and tenderness in the epigastrium. The bowels are at first costive, but afterwards become loose, and there are frequent evacuations of dark, offensive matter.

Causes. — This disease is produced by malarial exhalations from the decomposition of vegetable matter. It is most prevalent in hot climates, and in the summer and autumn.

Treatment. — If the fever be in the formative stage, and have not fully developed itself, give an emetic (1) (2), and follow it with a mild cathartic (7) (13).

If the disease be already developed, sponge the body, all over, several times a day, with cold or tepid water, according to the feelings of the patient, and give cooling drinks (132) (133) (298) (299). To moderate the fever, give three to ten-drop doses of tincture, or fluid extract of veratrum viride. The compound powder of ipecac and opium is a valuable preparation for the same purpose. Give cold water as drink if desired by the patient, or let him eat ice.

When the headache is very severe, let wet cups be applied upon the temples, or behind the ears; and the same remedy to the pit of the stomach, when there is great tenderness, is often desirable; though a mustard poultice will sometimes do better.

During the remissions of the fever, quinine, and other tonics are to be given, as in fever and ague.

Congestive Fever.—Pernicious Intermittent Fever.

This is the pernicious, or malignant form of *malarious* fever. It is marked, either in the earlier or later stage, by a rush of blood towards one or more organs, by which they are crowded full and *congested*, — hence its title of *congestive* fever.

Symptoms. — It may be *intermittent*, or *remittent*, — more commonly, it is the former. It may assume any of the types of periodical fever, but it is most frequently quotidian or tertian.

The first attack does not differ very materially from a common attack of simple intermittent. The first paroxysm is simple, exciting but little attention. The second is always severe, producing great coldness, and a death-like hue of the face and extremities. The advancement of the disease brings dry, husky, parched, and pungently hot skin, followed, after a time, by a cold, clammy sensation.

The eyes are dull, watery, and sometimes glassy; the countenance dull, sleepy, distressed; the tongue, at first white, changes to brown or black, and is usually tremulous; the breathing is hurried and difficult. Pressure over the liver, stomach, or bowels, produces pain. The mind is often disturbed, and falls into lethargy and stupor, or is delirious.

Treatment. — This should be very much like the treatment of the bilious remittent fever.

While getting up from the fever, the diet must be light and nutritious at first, but may be increased in quantity as the strength returns. Exercise out of doors must not be omitted. If recovery be slow, some mild tonic, or a little wine, or ale, or brandy, may be taken two or three times a day.

Fever and Ague.—Intermittent Fever.

This is a kind of fever in which there is a succession of attacks with equal *intervals*, and *intermissions* that are complete but unequal, on account of the uncertain duration of each fit.

An *interval* is the period of time between the beginning of one fit, and the beginning of the next.

An *intermission* is the period of time between the close of one fit, and the beginning of the next.

The different varieties of ague take their designation from the length of the interval in each case.

The interval of a *quotidian*, or *daily* ague, is twenty-four hours.

The interval of a *tertian*, or *third-day* ague, is forty-eight hours.

The interval of a *quartan*, or *fourth-day* ague, is seventy-two hours.

Symptoms. — The disease first develops itself by an *ague fit*. This has three stages, the cold, the hot, and the sweating. The cold stage is very marked. The patient has a sense of a debility, yawns, stretches, has no appetite, and does not wish to move. The face and extremities become pale, the skin shrinks, causing universal *horripilation*, or *goose-flesh;* the patient shakes, and his teeth chatter.

After a time, these symptoms decline, and the hot stage comes on, which is characterized by high fever, with its various uncomfortable sensations.

When this fever passes off, it is followed by the *sweating stage*, during which a moisture breaks out which increases, frequently, to a profuse sweat; the body returns to its natural temperature, the pains and aches disappear, and a feeling of health comes back.

During the cold stage, the blood is driven inward from the surface, and particularly oppresses the spleen, which, in cases of long standing, becomes swelled and permanently enlarged. This swelling may be plainly felt, and is often quite perceptible to the eye. It is called *ague cake*.

Ague fits begin at different hours of the day, and generally terminate in the evening.

A quotidian usually begins in the morning; a tertian at noon; and a quartan in the afternoon.

The cold stage is shortest in the quotidian, and longest in the quartan.

Thus the longest fit has the shortest interval, and the shortest cold stage; while the shortest fit has the longest interval, and the longest cold stage.

There are also double tertians and double quartans, wherein the fits repeat themselves, — sometimes the same day, at other times on alternate days.

To these varieties, the terms *postponing* and *anticipating* are applied, according as the intervals are growing longer or shorter. When a person is recovering from ague, the interval may gradually grow longer, the attack being *put off*, or *postponed*. But if the disease be increasing in severity, the attack may *anticipate* its usual period, making the interval shorter.

Tertians are more common than either quotidians or quartans.

Agues are more prevalent in spring and autumn. Fall agues are most severe and dangerous.

Causes. — Exhalations from the soil, called *malaria*, arising from decomposition of vegetable matter in new countries, or from low and marshy districts in which the land is alternately covered with water, and again left dry and exposed to the sun.

In districts where it prevails, high hills are exempt, and even the upper stories of houses are more healthy than the lower.

Treatment. — First clear the bowels with the fluid extract of senna (15), or the preparation (21). Then, in the cold stage, give hot, and in some cases, stimulating drinks. Administer hot foot baths, and, putting the patient in bed, apply bottles filled with hot water to the feet, sides, and back, and in every way try to excite warmth and comfort.

In the hot stage, give cooling drinks, and opium (117) (118) in decided doses; or, what is better, quinine (67) in two teaspoonful doses every half hour, at the same time giving five-drop doses of tincture or fluid extract of veratrum viride every hour.

During the sweating stage, stop the veratrum, and rub the patient with dry towels.

In the intermission, give quinine (62), in three-grain doses, once in three or four hours, and continue it, gradually increasing the dose, a fortnight after the cessation of the attacks. The following is a good preparation: quinine, one scruple; elixir of vitriol, one dram; dissolve the quinine in the elixir, and add tincture of black cohosh, fourteen drams. Twenty drops are to be given, in a little water, once an hour.

The web of the black spider, rolled up into five-grain pills, and taken, one pill at a time, once in two hours during the intermission, is said to cure many cases.

It is important, in fever and ague districts, to avoid the hot sun, and the damp evening and morning air.

Yellow Fever.

This disease belongs to warm climates, being most prevalent in Southern cities. It makes its appearance chiefly in the latter part of summer, and disappears upon the approach of frosty weather.

Symptoms. — The complaint begins, generally, with a chill, which is sometimes severe, though commonly moderate, of short duration, and rarely repeated.

Following this chill, there is moderate fever, and a little heat of surface; but this rarely rises to any considerable height, and only continues to the second or third day, when, in fatal cases, it gives place to coldness of surface, etc. In many cases there is sweating.

The pulse is peculiar, — not easily described, — generally not rising above one hundred in a minute, — a kind of *bubble* under the finger, which breaks and vanishes before it can be fairly felt.

The tongue is moist and white in the first and second days, but red, smooth, shining, and dry, as the disease advances towards the close, having a dry, black streak in the middle.

The most striking symptoms are nausea and vomiting. The vomiting, in fatal cases, is generally very persistent, and towards the termination, the yellowish or greenish matters thrown give place to thin and black fluid, having a sediment looking like coffee-grounds. This is called the *black vomit.*

The bowels are generally costive, with frequent epigastric tenderness and distress. There is generally severe headache, and a peculiar expression of countenance, in which the lips smile, but the rest of the face is fixed and sad, sometimes wild. The patient continues wakeful, night and day. There are discharges of blood, often, from the nose, the gums, the ears, the stomach, the bowels, and the urinary passages.

Treatment. — First, move the bowels with some mild physic (40) (18) (19) (41) (37).

During the chill, put the feet in a mustard bath (242), give warm cordial drinks, and apply hot bottles etc., externally.

Cups may be applied to the back of the neck, or over the stomach, according to circumstances.

During the second stage, or *stage of calm*, nothing is to be done but give some light stimulants, and to promote sweating by warm drinks, and tincture of veratrum viride; and also quinine (62).

The third and severest stage is to be met by stimulants, as brandy, freely given, with a continuance of the quinine.

During the fever stage, and for the vomiting, give *creosote*, twenty drops to six ounces of spirits of Mindererus, and alcohol enough to dissolve the creosote. The dose is half an ounce every two hours. Said to be excellent for putting a stop to the retching and vomiting.

Cleanliness, temperance, and cheerfulness, are essential in warding off the disease when one is exposed to its cause.

Rheumatism.

This is an inflammation of a peculiar character, being caused by acid or poisonous matter in the blood, and having for its seat the *fibrous tissue*, or that thready texture which enters largely into the composition of the cords and muscles of the human body. The *synovial*, or lining membrane of joints, is also peculiarly subject to rheumatic inflammation. Hence the terms, *fibrous rheumatism*, and *synovial rheumatism*. There are also acute and chronic rheumatism.

Acute Rheumatism

Is a very painful affection. It is most frequently brought on by exposure to wet and cold after violent and fatiguing exercise of the muscles.

Symptoms. — Its principal characteristics are, high fever, with a full, bounding pulse; furred tongue; profuse sweat, which has a sour smell, and seems to increase the weakness without relieving the pain; scanty and high-colored urine, with brick-dust settlings; and swelling of the joints, with slight redness, great tenderness, and severe pain, which is particularly agonizing when the patient attempts to move.

This affection often changes suddenly from one part of the body to another, or from one set of joints to another. This sudden shifting, termed *metastasis*, is peculiarly dangerous; for sometimes the inflammation, seeming to regard the constantly moving heart as a large central point, suddenly seizes upon its lining membrane, and occasionally proves speedily fatal.

Treatment. — It is well first to open the bowels freely with the compound powder of leptandrin, or the compound powder jalap. Then give tincture of black cohosh and tincture of veratrum viride (124), and push the preparation to the extent of producing sweating. This, if no evil effects seem to result from it, that is, no prostration or bad feelings in the head, may be kept up till the violence of the disease abates.

Sometimes opium, nitrate of potash, etc. (127), administered one or more times, will have a good effect.

The tincture of black cohosh root, two parts, and the tincture of colchicum root, one part, and given in doses of forty drops, is a valuable remedy.

For articular rheumatism, iodide of potassium, one dram, and morphia, one grain, dissolved in one ounce of water, and given three or four times a day, in two teaspoonful doses, are said to have the power of shortening the disease.

It is a valuable treatment, after clearing the bowels with salts and senna, to give equal parts of wine of colchicum and spirits of tur-

pentine in doses of ten drops every two or three hours; and after a day or two, to give, in connection with the above, at intervals of five hours, tincture of chloride of iron, ten drops, with ten to twenty drops of laudanum.

Fomentations of hops and cicuta, or stramonium leaves, placed upon the inflamed and swollen joints, will have a good effect in relieving the pain. The *recent* leaves of stramonium, pounded, mixed with a little water, and laid upon the joints, is said to act very favorably. (See p. 880.)

Chronic Rheumatism.

The chronic form of rheumatism may follow the acute as its consequence, but is more often an independent disease. It is seldom attended by fever, and in this differs from the acute rheumatism. It often lasts a long time, and causes much suffering.

Symptoms. — These are various, but are generally understood, even by the common people, to consist of pain, lameness, stiffness, etc., in the joints and other parts. The joints are often swollen, but not as much as in the acute disease. It is peculiar to this form of the complaint, that when the patient remains at rest for a time, he will have pain and stiffness in the affected part on beginning to move, but as he grows warm, both will disappear.

Treatment. — This complaint is often palliated, and sometimes cured, by passing a current of electro-magnetism through the affected part.

The tincture or the fluid extract of black cohosh, taken in full doses, is one of the best remedies. It may be taken alone, or mixed with the tincture of poke-berries, and a tincture of prickly-ash bark, if convenient.

Opium and nitre (127) form a valuable remedy. Colchicum is much used, and has a deservedly high reputation (292) (301).

Liniments often have a good effect (190) (195) (196) (198). It is well to wear a piece of oiled silk over the affected part. It keeps up a gentle perspiration from the rheumatic surface, and materially hastens a cure.

To bathe the affected joint at bed-time with hot sweet oil, and then envelop it in cotton batting, to be kept on through the night, will often give much relief.

The bowels must be kept regular, and all exposure to wet feet or clothes, and to currents of cool air when sweating, must be carefully shunned.

Gout.

Gout is rheumatism's cousin; the parentage of both belong to the brotherhood of the *acids*.

A very acid state of the blood, or a state favorable to the formation of acid, is supposed to be the cause of the inflammation peculiar

to both these disorders. In rheumatism, an acid which exists in sour milk, and in cider, called lactic acid, is thought to be the disturbing element. In gout, lithic or uric acid is known to be uncommonly abundant, and to form a principal ingredient of those concretions, found in gouty joints, and familiarly called *chalk-stones.*

The larger joints are most often affected by rheumatism; while gout prefers the smaller ones. In rheumatism, the pain is *excruciating;* in gout, it is *intolerable.* There is truth in the humorous Frenchman's description of the pains of these two complaints, which is, in substance, as follows: Place your joint in a vice; turn the screw till you can bear it no longer; that gives you an idea of rheumatism; now give the instrument one more turn, and you have gout.

Symptoms. — A fit of the gout, as it is called, generally makes its attack in the night. Its unsuspecting victim is first awakened, perhaps an hour or two after midnight, by an intensely burning, wrenching pain in the ball of the great toe, or some other small joint. This pain, with its accompanying symptoms of fever, continues with little abatement for twenty-four hours. There is then a distinct remission, when the sufferer may get some sleep. He has a similar experience during several succeeding days and nights, when the disease, which has been growing milder, leaves him.

After a considerable interval, there is likely to be another similar visitation. The length of this interval is inversely as the number of attacks, — that is, it diminishes in length as the attacks increase in number; in yet plainer and more homely terms, the attacks come "thicker and faster;" the space between them gradually shrinking from three or four years to one or two months.

Recovery from the first attack may be complete, — the skin peeling off from the red and swollen joint, and leaving it strong and supple as ever. But, after several repetitions of the inflammation, the joint becomes stiff, its motions being obstructed by the deposit of lithic acid concretions, or chalk-stones. The limbs are sometimes actually frosted over with crystals of urate of soda (Fig. 143). This form of urate of soda crystals differs very materially from Fig. 122. When these crystals appear upon the surface, and deposits are made in the joints, uric acid is not secreted as usual by the kidneys, but accumulates in the blood.

Fig. 143.

But gout is a disease by no means entirely local in its character. It vitiates the blood, affects the system generally, and is often betrayed by general symptoms long before the local mischief is indicated by one of the attacks. Irritability of temper, unpleasant sensations in the stomach and head, and various uncomfortable feelings of body and mind, have been considered as premonitory of this disorder. Many other organs also, beside joints, are subject to the gouty inflammation. The stomach, heart, lungs, head, and even the eyes, are known to have been thus affected.

Causes. — Luxury and indolence, — particularly the former, — are regarded as the principal causes of gout.

Treatment. — Colchicum is the remedy for gout. It removes the disease by exciting the kidneys to action, so that the poison is conveyed away in the urine. Perhaps it acts in some other unexplained way, as an antidote to the disease. One teaspoonful of the wine of colchicum may be taken two or three times a day, until relief is experienced. It should then be continued, in ten-drop doses, for a few days longer, to prevent a relapse. The colchicum may be taken in the form of prescription (301).

Coffee, drank freely every day, is said to be a sovereign remedy for gout. It is also declared to be excellent for gravel, — a fact which I forgot to mention when treating of the affections of the kidneys, etc.

The bowels must be kept in order, but not actually purged (34) (40). The diet must be simple and unstimulating.

Let the inflamed joint be bathed often in a saturated solution of bicarbonate of soda in soft, warm water. Cold applications should not be made, as there is danger of provoking a sudden change of the inflammation to some internal organ.

Scrofula.—King's Evil.

This disease was once thought to be peculiar to swine, and hence derived its name from *scrofu*, a sow. It shows itself in various forms, — as hip disease, white swelling, rickets, salt-rheum, etc. Persons affected by it are subject to swelling of the glands, particularly those of the neck.

Symptoms. — In the beginning of the disease, small, hard, movable kernels appear about the neck, just under the skin. These are lymphatic glands, and the swelling generally takes place long before there is any soreness, or perceptible redness. They may be felt under the skin; and, in the course of six months or a year, may grow to the size of a filbert, or even a hen's egg. Sometimes they are much larger even than this, and very hard. They may appear in many other parts beside the neck.

After a time, though very slowly, they come to a head, and break, — discharging a watery fluid, or a mixture like whey and curd. They are seldom very sore. When they heal, they are apt to leave a puckered condition of the skin, and ugly scars.

The scrofulous humor may sometimes affect the eyes, when the lids will become red and thick, and discharge mucus and water; — the under lid sometimes turning out, and presenting a shocking spectacle.

The scrofulous condition is generally supposed to be indicated by a white, delicate skin, thick lips, light hair, and a delicate constitution; but these signs are not worthy of much confidence.

The disease often attacks the cellular tissue, causing numerous

suppurations and abscesses. It also affects the bones, producing caries, necrosis, and other affections. It shows itself in certain inflammations of the eyes, in the formation of running sores in the ears, and in various other ways.

Causes. — It is contended by some, that scrofula is in all cases inherited; that we receive it from our progenitors, as we do their other constitutional peculiarities; that the disease is everywhere, and in all time, one and the same, which shows it to come from within, and not from without; that were it dependent on external causes for its existence, it would be greatly modified by temperature, climate, and the peculiarities of the races affected by it.

They assert that though the causes which are usually assigned for scrofula, such as living in cold, damp, and impure air, and the lack of sufficient food, connected with filthy habits, often have a powerful effect in developing scrofula already existing in the constitution, and of aggravating it when already developed; it never produces it.

How far these statements are to be received, I will not undertake to judge. It is certain that the disease is often inherited; and if we admit that the other causes named have some share in its production, it is possible we may not go entirely astray. Yet my own strong suspicion that scrofula arises from the animal poison of syphilis, filtered through the blood of many generations, inclines me to the adoption of the above views.

Treatment. — In olden times of superstition, this disease was believed to be cured by the patient coming into the presence of the king, and being touched by his royal hand. The ceremony was called the "sacred touch." It was from this that the disease took its name of "king's evil." This superstition reached its height in the reign of Charles II. After the Restoration, the numbers who flocked to Whitehall and Windsor to receive the "touch," are said to have been immense, — no less than *ninety-two thousand* in twelve years; and the writers of that day declare that none failed to receive benefit.

In modern times, believing that the ceremony of the touch was best adapted to the period when kings were thought to have sacred persons, we rely for the cure of this disease, upon rational medicine and hygiene.

The medical treatment of it is constitutional and local.

Iodine is the great remedy for scrofula. Dissolve one scruple of iodine and two scruples of iodide of potassium in seven teaspoonfuls of water. Of this, give ten drops three times a day, in a little water, gradually increasing the dose to once and a half or twice that amount. The iodide of potassium, as in prescription (101), is a good remedy.

Where there is considerable debility, the iodide of iron, in doses of twenty-five or thirty drops, in water, three times a day, is a good preparation.

The compound syrup of yellow dock root, and the compound syrup of stillingia, taken sometimes alone, and at other times, with two to five grains of iodide of potassium in each dose, are both excellent medicines for scrofula.

The bowels must be kept open by laxative food, or in the failure of this, by some gentle physic (12).

Medicinal springs, particularly those containing iodine, are excellent.

Before the tumors become very sore, let them be bathed several times a day with a solution of muriate of lime, or ammonia, or soda, two drams to the ounce of water. When they are inflamed, apply poultices of ground slippery elm and powdered bayberry, equal parts. Powdered poke-root, or blue-flag may be substituted for the bayberry. If these things are not at hand, use white bread and milk, or flax-seed poultices.

When the tumors have opened, and ulcers have formed, the ulcers must be washed out with soap suds, and dressed with salve made of beeswax and sweet oil; or, when the ulcers are indolent, with the red iodide of mercury ointment. Let the dressing be changed two or three times a day.

Great attention should be paid to the improvement of the general health. The diet must be ample and nourishing,—consisting of fresh meat, poultry, broths, soups, milk, and wholesome vegetables in such variety as the season allows.

The skin must be washed daily with cool water and spirit, or water and saleratus; and rubbed to redness with a coarse towel, or flesh brush. Either flannel or silk should be worn next the skin, summer and winter.

Exercise must be regular, and cheerfully performed, in the open air. If the residence be in a damp and unhealthy air, it should be changed at once, if possible. In any case, a change of residence, from time to time, when travelling is not possible, is much to be desired.

Scurvy.—*Scorbutus.*

Owing to a better knowledge of this disease, and of its proper treatment, it is much less common than in former years. It chiefly affects seamen who make long voyages; but is not entirely unknown on land.

Symptoms. — Languor, loss of strength, and great depression of mind, are among the first signs of scurvy. To one about being attacked, work and play are alike burdensome. There is no heart even to move. The face, and the whole skin, look pale and bloated, and the breath has a fetid smell. The gums are swelled, soft, red, and spongy; and they bleed upon the slightest touch,—sometimes the blood oozes from them spontaneously. The teeth get loose, and often fall out. The skin becomes covered with bluish or purple spots,—looking precisely like bruises. These spots spread and run into each other, forming large patches of discoloration.

These spots appear to be formed by the bursting of the small capillaries of the veins and arteries, which have grown too weak and rotten to hold their contents, and the infiltration of dissolved blood into the cellular substance under the skin.

Ulcerous sores break out in various parts of the body, which smell badly, and discharge a thin matter. These ulcers are covered with a crust. Various parts of the body, the bones included, are twinged with pains. The pulse is weak and soft. All the secretions, including the urine, have an offensive smell, — as though the whole body were approaching putridity. In truth, the whole man seems to be disintegrating, decaying; the flesh becomes soft, and dwindles; and the bones break easily, — being afflicted with a decay approaching to rottenness.

In bad cases, blood is discharged from the bladder, bowels, womb, nose, and mouth; and the smallest exertion is followed by fainting, and in many cases, by sudden death.

Causes. — The disease is owing to the use of food and drink beginning to be decomposed, and to living long at sea without vegetables containing certain acids. Its attacks are likewise encouraged by whatever weakens and depresses the nervous system, — as long exposure to a moist, damp air, particularly when this is connected with confinement on board a ship, unclean linens, occasional loss of the usual rest, and great fatigue, as in storms. The force of these causes is increased by the loneliness, the sadness, and the despondency of the sailor's life.

Treatment. — Sailors are very much protected from the disease now, by frequent returns to land, during long voyages, to procure fresh meats, vegetables, and water. This practice is very generally adopted, particularly by our whale ships, which make long voyages; and the result is, very little scurvy, and general health among the men.

One of the best medicines for the disease is quinine; it may be given in from one to two-grain doses twice or three times a day. Gentian and quassia are also suitable remedies; so is the muriatic tincture of iron (73).

But the best of all remedies are fresh and succulent vegetables, and also fruits. Spinage, lettuce, dandelion, sorrel, cresses, and the like, are among the very best things when they can be had. Lemon juice produces the happiest effects. Potatoes are among the very best remedies, — particularly if scraped and ate raw. They are also valuable when cooked. Spruce beer is a good antidote; and may be made at sea from the essence. Many kinds of beer may be brewed at sea, which are valuable.

When the bowels are costive, cream of tartar, dissolved in water, and drank freely, will be found the best remedy. If there be looseness of the bowels, morphine, laudanum, a tea made of logwood, or geranium, or the tincture of catechu, will be suitable.

For the spongy gums, a solution of alum applied to them will be

proper, or a mixture of equal parts of tincture of myrrh, catechu, and Peruvian bark; and ulcers may be washed with the same.

Vinegar, which is an excellent prevention in this disease, may be made at sea from molasses and water exposed to the sun. Two ounces of nitre dissolved in a quart of vinegar, and given in table-spoonful doses, three times a day, is said to be an excellent remedy.

Every ship, on going to sea, should be supplied with dried fruit, as raisins, currants, whortleberries, prunes, etc.; and should have peas, beans, rice, flour, sugar, and molasses. Beside these, ships should have essence of spruce and lemon, and dried balm, sage, pennyroyal, and other herbs.

Seamen, when down with this disease, should be moved with care, as the spark of life may be easily extinguished.

Purple Disease.—*Purpura Hemorrhagica.*

This has been sometimes ranked as an affection of the skin; but it is not such; it is rather a disease of the general system.

Symptoms.— This complaint is known by the appearance upon the skin of two kinds of spots; the one kind are small, round, bright-red points, even with the surface, and changing in a day or two to a purple or livid color, which are yellowish brown when about to disappear. This variety of the purples is quite simple, attacking, generally, young persons, and in warm weather. It is sometimes tedious in its course, but never dangerous. It requires little treatment;— pure air, wholesome diet, with quinia and the mineral acids, make up the chief part of it. It may be known by the spots not disappearing when pressed upon by the finger.

The other and more dangerous variety of the disease is attended, generally, by faintness, wandering pains, great debility, and the appearance upon the legs, arms, and body, of dark-red spots, and irregular, livid patches, looking just like the marks of recent bruises. These marks are caused by the effusion of blood in patches under the skin; and in this respect, they are just like bruises, only they are produced by different causes.

In the rapid progress of the disease, dark venous blood frequently oozes from the tongue, mucous membrane of the mouth, nose, breathing tubes, ears, vagina, womb, stomach, etc. The other symptoms vary in different cases very much, but generally indicate great disturbance of the system.

It often runs a very rapid course, but sometimes remains for months.

Treatment.— The bowels are to be kept regular by gentle physic (26) (21) (12) (15).

Iron is a valuable remedy (73).

Astringents generally have a good effect (156) (159) (279) (305). The best astringent in this complaint, is gallic acid, taken in five-grain doses, every three or four hours.

The sponge bath, twice a day, with tepid or cool water, and followed with gentle rubbing with a coarse towel, will do much to restore and equalize the circulation in the skin.

During the active stage of the disease, the diet should be very light,—simple toast-water, rice and arrow-root gruel, and either alum or wine whey.

While getting well, the patient may have a more nourishing diet, consisting of tender fresh meat, broths, etc.; and must take gentle exercise in the open air.

SURGICAL DISEASES.

Inflammation.

Every part of the body, which has vessels and nerves, is liable to inflammation. Where there are no nerves, it cannot exist. Many diseases are caused by it. Mechanical injuries, such as cuts, bruises, and fractures, produce it. And many other disorders, not caused by or causing it in the beginning, become entangled with it in their progress. It is very important, therefore, to understand the nature and management of inflammation. It is not always to be looked upon as a disease; it is frequently a simple process of repair, whereby nature restores injured parts to health.

The Signs of Inflammation are *redness*, *pain*, *heat*, and *swelling*, though in some cases, these do not all appear.

Acute Inflammation. — When the redness, the pain, the heat, and the swelling, are clearly marked, and the inflammation is so rapid, that it either subsides in a few days, or quickly brings on *suppuration*, or *ulceration*, or *mortification*, it is said to be *acute*.

Chronic Inflammation. — When it is less painful, and slower in its progress, beginning very gradually, and lingering a long time, it is then *chronic*.

Common, or Simple, or Healthy Inflammation is that which is not mixed up with any disease, but is established by nature for some salutary purpose.

Unhealthy Inflammation is that which has been caused by some other disease, and is under its control.

Specific Inflammation is that which seems to vary from all ordinary cases, being dependent on a particular state of the system, on an animal poison, or a principle of contagion or infection, and a power of propagation from one person to another.

Some of these produce such permanent effects, that those having them are not liable to a second attack.

Inflammation is Primary, or, as the doctors say, *idiopathic*, when it is the original disease.

Inflammation is Secondary or Sympathetic when it is the result of some other disorder, which goes before, and produces it.

It has been explained elsewhere that the different parts of the body are connected by little threads or nervous strings which run from one to the other. If one part of the body become injured or disordered, it uses these nervous threads, as telegraphic wires, to tell other parts of its misfortune; and it sometimes happens, that when the intelligence conveyed is of a sad and alarming character, the part receiving the news is so excited and distressed as to become *inflamed*. Nothing can be more proper than to call this *sympathetic* inflammation.

When the inflammation is violent, and is seated upon some important part, the sympathetic action is so great as to disturb the whole constitution; and this general disturbance is *sympathetic* or *symptomatic inflammatory fever*.

The Symptoms are quick and strong pulse, dryness and heat of skin, parched mouth, great thirst, scanty and high-colored urine, costiveness, disordered nervous system, loss of appetite, anxiety, restlessness, sleeplessness, headache, wandering and confusion of mind, and sometimes delirium. This fever John Hunter called a universal sympathy of the body with the disturbed condition of a part of it.

It is only by inflammation that a wound is healed, or a broken bone repaired.

Upon the surface of a wound nature pours out a fluid called *plastic lymph*. This is composed of *fibrine*, — the material of which flesh is made, — united with a little of the watery part of the blood, chiefly albumen. The watery part disappears soon after it is poured out, and the fibrine hardens into a kind of membrane. Through this, nature sends small nerves, arteries, and veins, which she uses as *threads to sew up the wound*. Fibrine being the chief material with which nature constructs our bodies, she of course uses it to repair them when wounded, — just as a carpenter, who constructs a floor with planks, uses planks to mend it when it is broken through.

In the case of highly inflamed and swelled tonsils, nature sometimes becomes alarmed, and, for once making a mistake, she rushes in with her material for repair, and fills up all the interspaces with fibrine, — thus hardening the glands, and making their cure impossible without cutting them off. But in most cases, nature is right, and cures the injury by inflammation.

Buffy Coat of the Blood. — The effects of inflammation extend to the blood. This fluid, when drawn from the veins of a person suffering from an inflammation active enough to disturb the constitution, forms a clot in the basin more slowly than usual, but the clot is harder; and a layer of fibrine is left upon the surface of a *yellowish buff color*, looking like size or glue, and called the *buffy coat*. The clot is also scooped out in the centre, and the blood is said to be *cupped*.

Coin Discs. — It is another peculiarity of inflamed blood, that if a drop of it be examined under a powerful microscope, its globules,

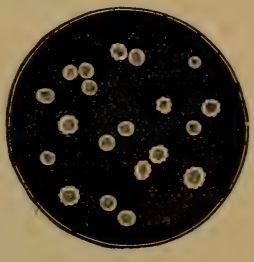
or discs, which are very numerous, will be found standing on their edges, and leaning against each other, like a row of copper or silver coins. (Fig. 144.)

Inflammation may end in one of four different ways.

I. By Resolution. — Suppose a large splint of wood be stuck into the hand of a healthy man. It causes redness, heat, swelling, and pain; and these, combined, are inflammation. The splint is pulled out, and the hand well done up with a water dressing, and properly cared for. The redness fades, the heat declines, the swelling subsides, and the pain disappears; the inflammation is ended, and the hand is well. Coming to a fortunate end in this way, inflammatio is said to be *resolved*, or terminated by *resolution.*

Fig. 144.

Fig. 145.



II. By Suppuration. — It does not always end so happily. The splint may be broken off below the skin, and not pulled out; and proper means may not be used to subdue the inflammation. Instead of abating, it may increase; and the centre of the injured part may begin to rise up to a point, and grow white on the top. This shows that there is *matter* formed underneath, which is lifting up the scarf-skin, and seeking to come through. Fig. 145 is a microscopic view of pus corpuscles.

The pain is now very throbbing and pulsating, — keeping time with the beats of the heart. When the scarf-skin can hold out no longer, it breaks, and yellow, cream-like fluid runs out, which we call pus. The redness, pain, etc., now subside. This process we call *suppuration.*

At this time, if the wound have been a severe one, attended by sympathetic fever, and the discharge of pus be now large, there may be a change in the fever, marked by frequent shiverings and chilliness, followed by flushes of heat, which ends in sweating. We call this *hectic fever.*

III. By Ulceration, or the formation of open, running sores.

IV. By Mortification. — If the wounded part have been so much injured as gradually to destroy its vitality, it dies. The vivid red of the inflammation changes to a purplish, or livid, or black hue. The strained condition of the skin ceases. — a bloody fluid lifts up the

cuticle, — the pain and feeling are all gone, — the part is dead and putrid, and gives out a peculiarly offensive smell. This process is called *mortification.*

The mortified and dead part is called a *slough;* and it is separated from the living parts by a peculiar vital process which has the name of *ulceration.*

Treatment of Inflammation. — Though inflammation sometimes ends kindly by resolution, and though it is often a salutary process, yet it is frequently very destructive, — ending in suppuration, ulceration, and mortification, — thickening, hardening, softening, and enlarging parts affected by it; and doing these things in textures of great delicacy, and of vital importance in the economy of life. It calls, therefore, for judicious, and, often, for very active treatment.

There are two principal things to be done, — to remove the cause, if it be still active, and to take the blood away from the inflamed part.

If a bullet be lodged in the flesh, or a thorn, or a splint of wood, or a piece of glass, it is the exciting cause of the inflammation which follows, and little can be done to advantage, till the offending substance is extracted. If inflammation be excited in the bladder by the irritating presence of urine, which cannot be passed, this must be drawn off with the catheter, before relief can be had. If the stomach be inflamed by improper food, or too much of it, the diet must cease to follow appetite, and take reason for its master. If ladies have excited inflammation in the bowels, or any of the internal organs, by a dragging weight of skirts, they must either put off the burden, or hang it upon the shoulders with straps.

The blood is removed from the inflamed part in two ways —

Cupping and Leeching. — It is done directly by cupping and leeching. These methods take the blood out of the small vessels, which are so full and crowded as to produce pain. Cold water, ice, etc., applied to the part, cause these little vessels to contract, and squeeze the blood out of themselves. These are very useful applications; and they are to be pursued as long as there is any hope of breaking up the inflammation, or causing it to end by resolution. But when this is no longer to be expected, and it is found that it will go on to suppuration, then apply warm fomentations and poultices. These will mollify and soften the parts, and cause the suppurating, or, in common language, the rotting process, to go on more rapidly, and with less pain.

Counter-Irritation. — The other method of removing the blood from the inflamed part is by what is called counter-irritation.

People are apt to think it very absurd that inflammation should be induced in one place to relieve or cure it in another. But it is not absurd. It relieves or cures on the principle of sympathy, which I have already explained. We put croton oil, or tartar emetic, or spanish flies, or cayenne pepper, or mustard, upon the surface of the bowels when the internal parts are dangerously inflamed, and what

is the result? Why, the terrible smarting and pain alarms nature, and she rushes up to the surface with a large amount of the blood around the inflamed parts, and there, for hours, perhaps for days, struggles to beat down the new mischief at the surface; and, in the mean time, the internal parts, relieved by the removal to the surface of so large a quantity of hot blood, make a long stride towards recovery.

A popular orator is speaking to a multitude in a hall which is thronged to excess, and a few feeble persons faint, and are likely to be suffocated and trodden upon in the dense mass. A person at the door, seeing what has happened, cries "*fire.*" The crowd rush out; the fainting persons get breath, and are saved. So, when the thousand streams of blood rush through their channels upon an inflamed and fainting internal organ, crowding and oppressing it, we set the skin on fire with some inflammatory substance; the blood rushes to the new point of excitement, and the oppressed and fainting organ recovers.

Cupping and leeching, which are often necessary, are not to be resorted to in very debilitated constitutions. In some persons, leeching produces erysipelas.

Costiveness is always produced by the symptomatic fever which often results from inflammation. This should be removed by saline purgatives, such as rochelle, epsom salts, glauber's salts, salts of tartar, tartrate of potassa, and the tartrate of soda (9) (7) (12) (14) (18) (20) (25) (27) (41). Sometimes more active purgatives are required, and then the compound extract of colocynth, etc. (29), will be excellent, or, five grains of blue pill, at night, followed by (299), may be used.

As a drink, cream of tartar (298) will be found cooling and refreshing. In all inflammations, the diet must be light and unstimulating.

Suppuration and Abscess.

An abscess is the collection of pus or matter in the substance of some part of the body. When the matter is poured out from some part, the process is said to be *suppuration;* when it collects in a tissue, it is an *abscess.* When the matter collecting in some organ, comes towards the surface, and a place in the centre rises above the surrounding skin, and turns white, the abscess is said to *point.* Some abscesses point and break in a week; others of a more chronic character, will linger on for months.

Fluctuation. — Before an abscess points, a *fluctuation* may generally be felt in the swelling, which is one of the surest signs that it contains pus. Sometimes this fluctuation may be felt even when the matter lies very deep in the flesh. And when it is so deep that it cannot be felt, if a sudden cessation of the symptomatic fever should occur, and *shiverings or rigors should come on,* attended by coldness in the affected part, we may reasonably suspect that pus is formed. It is not easy, at times, to say whether matter is really present; and

great care should be used not to plunge in a lancet where none exists.

Treatment. — When the abscess is completely formed, and there is no longer any doubt of the presence of matter, it should be opened at once. To let out the confined pus alleviates the pain, and lessens the inflammation. If the matter lie close to a bone, the opening should be made without delay. The opening should be large enough to let the matter out freely. It is a rule to keep the incision open till the cavity of the abscess is so far filled up that another collection of pus is not likely to occur.

If the matter do not readily get to the surface through the opening, it may burrow itself in the flesh, in a long narrow channel called a *sinus*. To relieve this, the opening must be extended in such a way as to give vent to the new collection.

An abscess is sometimes indisposed to heal at the bottom, and pus continues to be formed a long time, and is discharged through an opening smaller than the sack which contains it. This is a *fistula;* and the opening to it should be enlarged so as to let out the matter more freely. A little soft lint may then be gently pressed into the wound to prevent its healing before the cavity below.

An abscess from acute inflammation requires to be poulticed for a time after it has been opened. When the swelling and inflammation are gone, the poultices are to be laid aside, and a bandage put on. When the inflammation is gone, let the diet be improved; and if the discharge of matter be large, give wine and tonics.

Mortification.

The complete death of a part of the body, and its change into a black, stinking, cold, and insensible mass, with which the other parts of the system have discontinued all organic connection, is what we call mortification. That form of it which is most common, is said to be *humid*, on account of the moisture of the dead parts.

Gangrene. — Before the mortified part is completely dead, and, consequently, while its recovery is supposed to be possible, the condition of the part is called *gangrene*.

Sphacelus is the name given to it after its entire death.

Sloughing is the process of separating the dead matter, and the substance separated is a *slough*.

The causes of mortification are quite numerous. The most common are, stoppage of the circulation by inflammation, by mechanical causes which obstruct the passage of the blood, by chemical agents and poisons, and by local or general debility.

In a bad constitution, which bears disease poorly, mortification is *very* dangerous.

Treatment. — In treating mortification, three things are to be aimed at, — to stop its progress, to promote the separation of the dead from

the living parts, and to heal the ulcer which is left after the separation.

To stop the progress of mortification, we must remove its cause. If it be inflammation, treat that according to the principles laid down, though leeching, purgatives, etc., should be used sparingly, as mortification reduces the constitution so rapidly that it does not bear reducing as well as usual, and sometimes not at all. As soon as the inflammation has subsided, particularly if the system be weakened, tonic bitters and a nourishing diet must be had. When there is fever, with great excitement of the nervous system, delirium, picking of the bed-clothes, etc., the patient should have anodynes (121) and antispasmodics (87) (91) (90), with blisters upon the back of the neck, drafts upon the feet, and such other local remedies as the case may require.

It is of little use to put anything upon the mortified part, except with a view of lessening the stench. For this purpose, lay upon the part lint soaked in a solution of chloride of lime or soda, or a solution of pyroligneous acid, or of creosote.

Very little can be done to hasten the separation of the dead part from the living; but while it is taking place, a common flax-seed poultice, mixed with a little powdered charcoal, may be kept on it.

The ulcer left after the separation is to be treated like other ulcers.

Ulceration and Ulcers.

When the small particles composing the body have been used awhile, they wear out, and become useless. Over the whole body are distributed a multitude of small vessels, called absorbents, whose business it is to pick up these worn and loosened particles, and carry them away.

There is another class of small vessels, having just the opposite duty, — namely, to bring new particles of matter, and put in the places of those taken away. These are arteries. They are the natural artisans, who construct our bodies. The absorbents are the demolishers who pull them down. Under these two forces, our existence is, for a time, a drawn game between life and death. The absorbents, like myriads of hungry insects, eat us up, — the constructing arteries, like faithful builders, reconstruct us. The work of the absorbents, is called *absorption;* that of the constructing arteries *nutrition.*

When nutrition partially ceases, and absorption continues unabated, we grow thin, or lose flesh. This happens in consumption. If nutrition should stop altogether, absorption going on as usual, our bodies would be quickly destroyed. We should be wholly devoured by these little absorbent vessels. This would be *ulceration* applied to the whole body. But it does not appear in so *general* a form. It confines itself to particular parts.

When nutrition entirely ceases in any portion of the body, the absorbents devour all the skin, flesh, and vessels of the part, — leaving

an open cavity. The process of taking away the flesh, etc., is *ulceration*, — the cavity left is an *ulcer* or *sore*.

Natural Surgery. — Ulceration sometimes acts the part of a natural surgeon. When a part dies from mortification, it is necessary to have it removed; so nature sets up, directly around it, an acute inflammation, in which all nutrition stops, and absorption goes on rapidly. In this way, a complete dike is in a short time made around the dead mass, and it is as handsomely amputated, or cut off, as any surgeon could do it.

When the ulceration is going on, and the blood-vessels are being cut off by it, the blood coagulates or curdles in them for a short distance back from the breach, which prevents bleeding. This is as good as tying the arteries.

Some textures ulcerate more easily than others, — the skin and mucous membranes most easily of all.

Ulcers are divided into *healthy*, *unhealthy*, and *specific*.

A Healthy ulcer is a simple sore, not showing any bad symptoms, but rather a kindly disposition to heal. It is generally small in size, of a florid-red color, and has upon its surface, little elevations, pointed like cones, called *granulations*, which are not so apt as in the case of unhealthy ulcers, to rise above the level of the surrounding skin.

Unhealthy Ulcers comprise those called *irritable*, *indolent*, and *phagedenic*, etc.

Indolent Ulcers are numerous. The edges of the skin around them are generally thick, prominent, and rounded. The granulations are pale, smooth, large, and flabby, with a peculiar gloss upon them. These ulcers form most often on the leg; and the nearer they are to the ankle, the harder they are to cure.

Phagedenic Ulcers are those which look as though they literally eat away the parts. Their surface has a livid appearance. The matter formed is small in quantity, and is frequently tinged with blood.

Specific Ulcers embrace *scrofulous*, *cancerous*, *venereal*, *scorbutic*, and others. They are called specific because they are produced by particular diseases, and states of the system.

Treatment. — The first thing to be done is to remove the exciting cause. A venereal, or a scrofulous, or a scorbutic ulcer, cannot be cured, unless we first lessen the force of the disease in the general system. If the continuance of a sore depends on bad digestion, we cannot expect to cure it, till we put the stomach right.

Healthy ulcers want no treatment, except some simple dressing, such as marshmallow or spermaceti ointment. It is well, in some cases, to touch the granulations near the surface, with lunar caustic.

Ulcers upon the legs and ankles do not heal well if the patient walks about much, or even allows the legs to hang down a great deal.

Indolent ulcers are to be touched by lunar caustic stick, or by diluted nitric acid. The diluted ointment of the nitrate of mercury is also often used with benefit. So is the compound tincture of benzoin; the basilicon ointment, etc. Or, apply a bread and milk poultice to the ulcer, and keep the patient twenty-four hours in bed. Then apply the lunar caustic stick to the whole sore, and to the skin around it. Afterwards cover the ulcer with sticking plaster, and a bandage.

FIG. 146.

The following is the best plan. Lay upon the sore a number of pieces of lint, soaked in the nitric acid lotion (314), and cover them with a bread and milk poultice. Change these applications twice a day, and continue them till the discharge looks healthy, and the granulations begin to appear.

If there is inflammation about the sore, give some of the preparations of salts to purge the bowels, and confine the patient to bed. When the parts begin to look healthy, lay some pieces of lint upon the sore, wet with nitric acid lotion (214), or zinc lotion (215); and then apply strips of adhesive plaster, one and one-half inches wide, two-thirds round the limb, and extending an inch below the ulcer, and an inch above it, — at the same time, drawing the edges of the sore together with a gentle force, and retaining them there with the plaster. Put a compress of soft linen over the plaster, and apply a bandage over the whole, making it tighter below, and a little looser above, and extending to the knee. (Fig. 146).

Boils. — *Furunculus.*

UNDERNEATH the skin is a layer of tissue composed chiefly of cells. From this tissue there are small elevations, in the shape of cones, which rise up into the substance of the true skin. Like those papillæ of the skin which become inflamed and produce *corns*, these elevations are subject to an inflammation, which causes *boils.*

At first, a tender knot or hardness is felt just under the skin, which soon begins to look red. A painful tumor now begins to show itself, of a dusky red or purple color, which acquires the size of a pea, a hazel-nut, or a walnut. Sometime between the fourth and eighth day, it becomes pointed and white at the top, when the scarf-skin gives way, and lets out a little pus mixed with blood, and exposes to view a mass of dead matter, called a *core*, which is too large for the opening, and is not ready to come away, if it were not. This core is a mass of *mortified* or *dead* flesh; and nature is cutting a space around it, that it may be thrown off. In two or three more days, it comes away, leaving a cup-like cavity, which gradually fills up, and the boil is over.

Some costitutions yield boils in successive crops. When this hap-

pens they are a terrible affliction. There are not many Jobs who can bear them with patience.

Treatment. — A boil will generally run its course. A five-grain blue pill, taken at bed-time, when the boil is first showing itself, is about the only thing I know that will blast it. And yet, my unwillingness to encourage a general use of mercurials, makes me hesitate to recommend it. One pill, not to be repeated, can do no harm, however, and may safely be taken.

Boils may sometimes be stopped by touching them with lunar caustic. Water-dressing, if used early, and persevered in, will sometimes prevent their growing larger than a pea. After the boil has opened, apply poultices for a day or two, then some simple, stimulating ointment, as basilicon salve, or Turner's cerate, or nitric acid lotion (314). If boils continue to come out in successive crops, give alterative medicines, or sulphurous mineral waters, or liquor potassæ, or bicarbonate of soda.

Carbuncle. — *Anthrax.*

This is like a boil, only much larger, and more painful. Instead of one of the little cellular elevations being inflamed, as in the case of the boil, the carbuncle begins with the inflammation of several. Its surface is more flat than that of a boil; its inflammation more violent; and the constitutional symptoms excited more severe. It has the breadth, sometimes, of the top of a quart bowl. Like the boil, it appears most often upon the neck, the shoulders, the back, the buttocks, the thighs, etc. It goes through the same process as a boil, and ends in the same way, only discharging a vastly larger core.

Carbuncles most often appear in persons above middle age, and indicate an impaired and broken constitution. They occasion great suffering, and sometimes prove fatal. Upon the head or neck, they are more dangerous than in other situations.

Treatment. — Apply, constantly, during the formation of the carbuncle, either fomentations and poultices, or cold water dressing. I prefer the latter. To stop both the local and the constitutional disorder, make two incisions in the form of a cross, cutting entirely through the dead mass. Then apply a fermenting poultice, or one of oatmeal, for two or three days, — after which, use the basilicon salve, or apply daily a weak solution of lunar caustic, or the nitric acid lotion (314). During recovery, tonics are useful, such as quinine, tincture of peruvian bark, and sulphuric acid; and morphine to procure rest, at every stage when it is required.

Malignant Pustule.

This is one of the five diseases which man may take from animals. The other four are the *cow-pox*, *hydrophobia*, *glanders*, and *pestilential carbuncle*. This last is what the French call *charbon*, — pronounced

sharbo. My own mother and an elder brother came near losing their lives by it, — having taken it by handling the flesh and tallow of a dead cow.

Malignant pustule begins with a water-pimple, not bigger than a millet seed. Underneath it is a hard point, surrounded with redness, like a flea-bite. This hardness is soon attacked by mortification, which spreads on all sides, and kills everything as it goes. Next, in fatal cases, come great restlessness, faintings, sunken countenance, dry skin, dry brown tongue, despondency, delirium, and death. It is supposed generally not to arise from constitutional causes, but to be produced by a specific poison applied to the skin, or by eating the flesh of cattle which die of gangrenous diseases. The disorder is probably the same with the pestilential carbuncle.

Treatment. — Deep incisions, and the application of the most powerful caustics, as the caustic potash, etc., and tincture of peruvian bark, quinine, aromatic sulphuric acid, wine, ether, and opium. Probably the best treatment is to *surround* the pustule with a thick layer of ointment; then to fasten some lint to the end of a stick, wet it with nitric acid, and press it upon the pustule. Now apply cloths, wet with cold water, and when the slough comes off, dress with simple ointment, or touch occasionally with weak solution of nitrate of silver (211).

Chemical Injuries.

These are of two kinds, produced by causes of an exactly opposite nature. The first are

Burns and Scalds.

A *burn* is the effect of concentrated heat acting upon living tissues. The effects are inflammation, and sometimes complete disorganization and destruction of the parts.

A *scald* is an injury produced by applying hot water or other fluid, to the skin or mucous membrane. The natural temperature of the human body is ninety-eight degrees; that of boiling water, two hundred and twelve degrees. Bringing the skin in contact with a fluid heated so far above it, produces redness and pain; and when nothing is done instantly to ward off the injury, the scarf-skin is raised from the true skin in the form of a blister, filled with water.

The degree of danger from a burn or scald, depends upon the *extent* of the injured surface, and also upon the *depth* of the injury. An extensive scald or burn may prove fatal in a few hours, — the patient never rallying from the first prostration. These injuries are most dangerous when upon the head, neck, chest, and belly. Old persons, and those who are feeble, and have shattered constitutions, will sink under burns and scalds, from which robust persons will suffer but little.

Treatment. — For slight burns and scalds, make cold applications.

Put the injured part in very cold water, or lay upon it pieces of linen, or lint, wet with vinegar and water, or rose water and sugar of lead (238), or diluted solution of acetate of ammonia. When these are not to be quickly had, lay on scraped potatoes. The object is to reduce the inflammation, and to prevent blistering. They must, therefore be put on very soon. If the scald be extensive, and on the *body*, — producing shivering, faintness, paleness, and coldness of the skin, and a small pulse, — cold applications are not proper. In such case we may use warm fomentations, or, in the case of a child, the warm bath. A liniment of spirits of turpentine, linseed oil, etc. (194), makes an excellent application.

Raw cotton, spread out thin, and laid upon a burn, is a good dressing, and one which is much used. So is flour sprinkled upon the injured surface with a dredger. For loosening the flour when it is to be taken off, poultices are useful.

Keep the air from the wound as much as possible. With this view, do not remove the dressing often, and when a cold lotion is used, merely pour it upon the rags, letting them remain undisturbed.

Effects of Cold.—Frost-Bite.

Cold is a relative term. The same temperature may be called hot or cold, according as it is compared with a hotter or colder temperature. If we warm one hand by a fire, while we lay the other upon ice, and then plunge them both into cold water, the water will feel cold to the one which has been by the fire, and warm to the one taken from the ice.

The warmth of the body being ninety-eight degrees, any temperature below this may be said, in a certain sense, to be cold. Yet a temperature much lower than this, namely, from sixty to seventy, is the most agreeable and invigorating, because it takes away the heat just about as fast as it is produced in a healthy body.

The first effect of cold applied to the body is to weaken the circulation in the small blood-vessels of the skin. When applied with some intensity, the heart and arteries in general are weakened; the blood is delayed in the vessels near the surface, and not being changed to a red color in the lungs as fast as it should be, the fingers, ears, etc., become blue or livid; and, if the cold be continued sufficiently long, the circulation stops in these parts; heat ceases to be evolved, and mortification or death is the consequence. Parts killed in this way are said to be *frost-bitten.*

A free circulation of red blood is essential to the continuance of sensibility. Hence, when the circulation is seriously impeded by cold, the body becomes numb, — it loses its feeling; the muscles act feebly; a languor and torpor follows; drowsiness comes on, followed by sleep, from which there is no waking. Drowsiness, during exposure to extreme cold, indicates great danger.

Treatment. — It is a great principle in restoring frost-bitten parts, and persons benumbed with cold, to communicate heat in the most

gradual manner. Mr. Hunter says the degree of external heat should be in proportion to the quantity of life. When life is weakened and nearly destroyed by frost, therefore, the warmth imparted must be small, and rise no faster than life returns.

To restore a frozen limb or part, rub it with snow, or place it in cold water for some time. When feeling begins to return, still keep it in cold water, and let heat be added in a very gradual manner, by poring in, now and then, a very small quantity of warm water.

If a person be reduced by cold to insensibility, and *apparently frozen to death*, take his clothes off, and cover him all over with snow, except the mouth and nostrils. If snow is not to be had, put him in water as cold as ice, and let him lie for some minutes. Then rub him with cloths wet with cold water. When the body is thus thawed by degrees, and the muscles begin to relax, dry the body, and placing it in a cold bed, rub with the warm hands, only under the clothes. Continue this for hours. If signs of life appear, give a small injection of camphor and water, and put a drop of spirits of camphor on the tongue. After a time, rub with spirit and water, and finally with spirit, and give tea, or coffee. or brandy and water.

Mechanical Injuries.

Wounds are divided into several kinds.

Incised Wounds are very common. Being made with sharp instruments, they are *cuts*, and have no laceration or tearing about them.

Stabs, or Punctured Wounds, form another class. They are made with pointed weapons, as bayonets, lances, swords, and daggers. They are more dangerous than the former, because they penetrate to a greater depth, — injuring blood-vessels, nerves, bowels, and other organs.

Contused and Lacerated Wounds form still another class. They embrace gun-shot wounds, and all those produced by blunt instruments. They *tear*, and *bruise*, and *mash* the flesh.

Poisoned Wounds form yet another class. They are such as are united with the introduction of some venomous poison into the incised, or punctured, or contused part. Stings and bites of venomous insects and snakes are of this class, — also the wounds made by poisoned arrows.

Simple Wounds are such as are inflicted on a healthy subject with a clean sharp instrument.

Complicated Wounds are those inflicted when the state of the whole system, or of the wounded part, is such as to make it necessary for the surgeon to deviate from the treatment needed for a simple wound, — as, for example, when there is bleeding, or nervous symptoms, or great pain, or locked-jaw, or much contusion, or erysipelas.

Sympathetic Fever. — All large wounds are followed by symptomatic fever, which comes on from sixteen to thirty-six hours after the accident. This is generally of the inflammatory kind, and is indicated by greater warmth of the skin, a more frequent and stronger pulse, anxiety, thirst, and loss of digestive power. Where much blood is lost, and the constitution is feeble, the pulse is more quick than strong, and the fever of a lower and more typhoid type. In this case, blood must not be drawn.

Lacerated wounds are more dangerous than incised ones, because the parts are stretched and otherwise injured, besides being separated.

A very small wound upon the brain, the spinal marrow, the bowels, or the heart, will often prove fatal, because the functions of these parts are intimately connected with life.

Wounds of young persons heal much more rapidly and kindly than those of old persons.

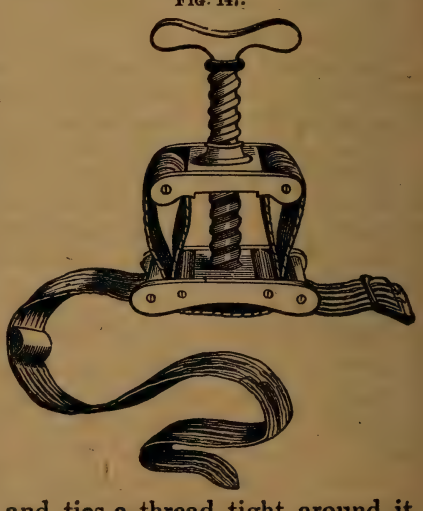
Incised Wounds.

When the flesh is divided with a cutting instrument, the cut edges separate, and the wound has a gaping appearance. This drawing apart happens in consequence of the elasticity of the skin. It often happens that vessels of considerable size are cut, so that bleeding is the principal thing to receive attention.

Treatment of Hemorrhage.—Bleeding is stopped by the *tourniquet*, by the *ligature*, by *compression*, by the application of *cold water* and *ice*, and by *astringents* and *styptics*.

The Tourniquet. — This instrument consists of a band and buckle, a pad, and two brass frames, the upper of which is furnished with two small rollers, and the lower with four, over all of which the band plays. When the handle is turned to the right or left, the band is tightened or relaxed to just the extent required. (Fig. 147.) The band is buckled round the limb in such a manner that the pad is placed exactly over the artery. When an artery is cut, it is known by the blood being *very red*, and *spirting out in jets;* and in this case, the instrument must be placed upon the limb *above* the wound, or between it and the heart.

Fig. 147.



The Ligature.—When an artery is divided, the surgeon lays hold of the end of it with his forceps, and ties a thread tight around it. This is called a *ligature*. By it, the bleeding is instantly stopped;

and long before the thread becomes loose, the opposite sides of the vessel have grown together, and all danger of a renewal of the bleeding is over.

Application of Water and Ice. — This is done by saturating with cold water several folds of linen rags, or lint pads, and applying them to the wound, remoistening, and reapplying them as fast as they become hot, till the pain and inflammation subside.

Compression. — When the blood does not come from any large vessel, but from several small ones, compression is sufficient. It consists in placing the opposite sides of the wound together, if possible, and then laying compresses over, and applying a bandage with moderate tightness.

Astringents and Styptics. — These are spirits, tinctures of myrrh, peruvian bark, diluted mineral acids, solutions of tannin, alum, sulphate of copper, decoctions of white oak bark, etc. These have the power to stop bleeding from small vessels. Monsel's salt, a remedy just coming into use, is said to have more power than all the above. It is a preparation of iron and nitric acid, and has been used with great success in stopping violent bleeding at the military hospital of Bordeaux. It is not a caustic or an irritant; but it acts very powerfully upon albumen and blood, — producing with the latter a large clot, *absolutely insoluble*, which continues to enlarge for several hours after the application, and becomes quite hard and firm, so that no blood can get through.

Beside these means, the application of the lunar caustic stick, potash, and the hot iron, are used, particularly the first, quite often.

Union by the First Intention.

When the bleeding is stopped, all foreign substances removed, and the wound properly cleansed, the next thing is to bring the opposite sides of the cut evenly together, and to keep them steadily in this position till they have healed. If this method succeeds, the healing takes place without the formation of any pus. This is called *healing by the first intention*, or *adhesion*. The cut surfaces *grow together*. For keeping the surfaces together, straps of adhesive plaster are used, putting them at right angles across the cut, and leaving spaces between them. Over the straps should be cold water dressings.

Sutures. — Incised wounds are sometimes, — though seldom now, — *sewed together*, by what is called the *interrupted suture*. After the bleeding is stopped, a curved needle is threaded, and, the lips of the wound being brought together, is introduced through the right lip, and then, being directed across the wound, is pushed through the left lip, from within outward. It is now cut off, and tied in a bow. These stitches should be at least an inch from each other. The adhesive plaster is generally better than the suture.

The first plasters and dressings should remain on the parts at least

three or four days, unless very great pain, bleeding, or some other bad symptom, should call for their removal.

Useful Rules for Examining and Dressing Wounds.

Never give the patient more pain from the mode of handling and dressing the wound than is necessary for his present good, or future safety. Never distress him by probing, squeezing, etc., to find things that will be of no use when learned.

Make all examinations as soon after the accident as possible; for, before inflammation and swelling take place, the probe or finger inflicts much less pain.

In changing the dressing of a wound, let all the fresh ones be ready before the removing of the old. The sponge, warm water, adhesive plaster, lint, ointment, lotions, bandages, etc., should all be at hand, and not have to be looked after when the wound is exposed.

Put the patient in the most easy position, that he may not be needlessly fatigued during the dressing.

If the bandage, plaster, and other dressings, have become hard, and glued together, and to the skin, by blood or matter, soften them with warm water, which is to be pressed out of a sponge, — a basin being held below the part to catch the water as it falls from the dressing.

The strips of adhesive plaster are to be removed by pulling gently at one end, and then the other, — each to be drawn *towards* the wound, so as not to pull its lips apart.

In large wounds, take off one, or at most, two strips of plaster at a time. Cleanse, wipe dry, and again support this part of the wound with new strips of plaster, before any more are taken off. This will prevent the wound being torn open by the weight of its parts.

If the wound be large and deep, its sides should be supported by an assistant while changing the dressings.

If there are several wounds, dress but one at a time, that there may be no needless exposure to the air.

Pay the utmost attention to cleanliness.

The frequency of the dressing must depend on the amount and quality of the discharge, the situation of the injury, the climate and season of the year, the effect produced by the dressing, and by the feelings of the patient. (See p. 878.)

The Way in which Wounds Unite.

When the two surfaces of a wound are brought together, they become impervious to the blood, but not to coagulable lymph, or fibrine. This, — the material of which all flesh is made, — flows out upon the two surfaces, and becomes a bond of union between them.

Into this layer of fibrine, the small blood-vessels, — arteries and veins, — which have been cut asunder, push themselves with open mouths, and, meeting in the centre, they inosculate, or grow together, and the blood resumes its circulation through them.

By this method, incised wounds of moderate size are often healed in forty-eight hours. This method of healing by the first intention is always to be brought about, if possible.

Punctured Wounds.

These are produced by swords, daggers, etc.

Great swelling and inflammation, large abscesses, erysipelas, the wounding of large arteries, and the consequent extravasation of blood, symptomatic fever, and lock-jaw, are the frequent results of punctured wounds. They are, therefore, more dangerous and hard to cure than cuts.

Treatment. — For the first twenty-four hours, use superficial dressings of lint, wet with a solution of sugar of lead dissolved in cold water, or with cold water simply, and a loose bandage. If, after this, pain and swelling should increase, leeches may be applied to the neighborhood of the wound, and fomentations, or poultices, be put in place of the cold water, — placing a small linen rag, spread with spermaceti cerate, over the wound. When the pain and inflammation are great, saline purgatives (7) (18) (25) (27), and opiates are often called for.

Contused and Lacerated Wounds.

These are produced by cudgels, stones, bullets, or whatever else of a blunt nature, tears asunder the muscular fibres, leaving jagged and uneven surfaces. They are rarely healed without suppuration, and are frequently followed by violent inflammation. They suppurate and slough, but they do not bleed much, — not even, sometimes, when large arteries are torn asunder. Whole limbs are occasionally torn away without hemorrhage. In warm climates, lock-jaw is a frequent consequence of them.

Treatment. — Draw the edges of the wound loosely together, and retain them with a few strips of adhesive plaster. Sometimes a suture, here and there, will be proper. If a great deal of inflammation ensues, take away the adhesive plaster and the stitches, and apply a poultice, or water dressing; and if there be much fever, restlessness, or delirium, saline purgatives (18) (25), opium (118), and very low diet, will be needed.

The wound having thrown off its sloughs, suppurated, become clean, and formed granulations, the poultices are to be taken off, and simple dressings substituted. These should be adapted to the conditions of the sore, according to the directions for treating ulcers.

When the wound is so severe that extensive mortification will be sure to follow, the limb must be immediately taken off, to save the life of the patient.

Granulation and Scarification.

Suppurating wounds heal in the same way with ulcers. The chasm is filled up by the appearance of little soft elevations of new substance, which originate at all points, and meet at the centre, drawing the sides nearer together, and raising the bottom towards the surface. This is called *granulation*, because these elevations *look like grains;* and the result is a new tissue, of a peculiar character, which constitutes the cicatrix, or scar.

Reproduction of Lost Parts.

Among some of the lower animals, whole limbs which have been destroyed, are easily reproduced. It is not so with man; though certain parts, when only partially destroyed, are sometimes regenerated. Thus, portions of skin, of considerable extent, are often reproduced; and so are the whole of some long bones, when destroyed by necrosis. The same is true, to some extent, of ligaments. But portions of brain, and spinal marrow, and muscle, and mucous membrane, when once removed, are never regenerated.

Gunshot Wounds.

At a time when fire-arms are so much carried about the person, and so often used for purposes of duelling, and murder, it is proper that every person should know something of the modes of treating gunshot wounds.

Treatment. — It is often proper to make a gunshot wound larger at the orifice. When this is done, it is generally on the side where the bullet has passed out, if it has gone entirely through. A bullet is always to be removed, if it can be felt.

The dressings are at first to be superficial, light, and unirritating. The common tepid water dressing, covered with a piece of oiled silk, is one of the best. Some use pledgets of simple ointment, poultices, and fomentations. These latter are generally employed during suppuration; but during the first two or three days, cold evaporating washes, and cold water, are best, when the wounded part is inflamed and hot, and the circulation is vigorous.

Poisoned Wounds.

To the bites of various creatures man is exposed in most climates, and all seasons of the year. These may be divided into three classes.

Bites of Musquitoes and Spiders, and Stings of Bees and Wasps. — For these, the best applications are a solution of common salt, or water of ammonia, or sugar of lead (239), or laudanum, or tincture of iodine. If none of these are at hand, at the moment, cover the part with wet earth. Tincture of arnica (240) is a good application.

Bites of Venomous Snakes. — Either instantly cut out a piece from the bitten part, or apply a dry cup, to prevent the absorption of the poison. Suction with the mouth will sometimes answer the same purpose. After doing one of these things, touch the part with caustic potash. Internally, give Fowler's solution, twenty drops, in a little water, every two hours. Also purgative injections, — stopping the arsenic when purging is well established.

For the bite of the rattle-snake, the only known remedy is alcoholic drink, taken in large quantities, and immediately. Gin and whiskey are believed to be the best. Fill the system full. When the poison has begun to take effect, enormous quantities will be borne, before intoxication can be induced. Keep the whole person saturated until the symptoms decline.

Fractures.

The existence of a fracture is to be known by the symptoms. These are, pain, swelling, deformity from the limb bending to one side, sometimes shortening of the limb, or loss of power to use it, and a crepitus or grating sound or sensation from the rubbing of the ends of the broken bone together. There are several kinds of fractures. They are

The Transverse Fracture, which is directly across the bone.

The Oblique Fracture, which runs from side to side, in an oblique direction.

The Longitudinal Fracture, which runs lengthwise of the bone.

A Simple Fracture is one in which the bone is broken simply, without any wound of the flesh with it.

A Compound Fracture consists of a simple fracture, and of an external wound in addition, caused by pushing the end of the broken bone through the flesh.

A Complicated Fracture is one in which, beside the breaking of the bone, there is the dislocation of a joint, the wounding of an artery, the extensive tearing of the soft parts, or the wounding of the bowels or some other internal organ.

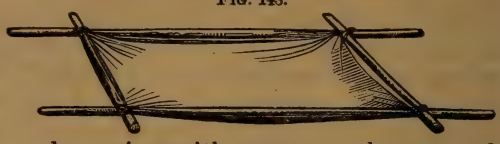
A Comminuted Fracture is one in which the bone is broken into several pieces.

Treatment of Fractures. — When a bone is broken, the first thing to be done is to get the injured person to his home, or to the nearest house. To do this in a rough or careless way, might add much to his sufferings.

If it be an arm which is broken, let it be placed in a broad sling, extending from the elbow to the fingers. In this condition the patient, if in tolerable health, and the distance is not great, will find it easier to walk home, than to bear the jolting of a carriage.

If the leg or the thigh be broken, then a hurdle of some sort (Fig. 148), must be obtained as soon as possible, and, being covered with straw, or blankets, or garments, the patient should be gently lifted upon it by just persons enough to raise him easily from the ground. This should now be carried by four persons, two at each end, moving with great gentleness, and keeping exact step with each other. If these persons take hold of the ends of two poles, laid under the hurdle, they will find they can carry it much more easily. If no hurdle be at hand, let four poles, two long ones, and two short ones, be laid across each other at right angles, and fastened together with nails or strings. Then lay upon these an old door, or some loose boards; and the injured person may be easily carried upon this temporary structure. A blanket fastened upon four poles, in the manner of a cot-bed, will answer a good purpose.

FIG. 148.



Having placed the patient upon the hand carriage, bring the sound limb and the broken one snug together, and tie them to each other with two or three pocket handkerchiefs; this will support the broken limb, and prevent its being shaken about and injured by motion. In doing this, the limb should be laid as near as possible in the natural position, so that the bones may not get out of place, and their ends get pushed through the flesh.

The Reduction, or Setting of the Fracture, is the first thing to be done. By this is meant the bringing of the ends of the broken bone together, and adjusting them to each other in their natural position. This is done by what surgeons call *extension*, *counter-extension*, and *coaptation*.

Extension means taking hold of the limb *below* the fracture and pulling *from* the body.

Counter-Extension is pulling *above* the fracture *towards* the body. These opposite pullings are done at the same time to overcome the force of the muscles, which contract, and draw the ends of the bone by each other and shorten the limb.

Sometimes no extension or counter-extension is necessary, the ends of the broken bone not being pulled out of their place. When the pulling is necessary, it should be gentle and steady. (See p. 877.)

Coaptation means *adjusting* the ends of the bone to each other.

The next thing is to provide for keeping the ends of the broken bone steadily in contact, so that nature may have a fair chance to unite them.

To secure this object, mechanical contrivances are used, which are simple, and may always be had without difficulty.

They consist of *linen bandages*, about the breadth of four fingers, and from four to ten yards long; and *pads*, made of old woollen cloth or blankets lightly quilted together, or pillow-cases filled with tow, or chaff, or cut straw, or even leaves; and of *splints*, made of clapboards,

or thick shingles, four fingers wide, and in length corresponding with that of the broken limb; or wheat straw laid side by side, and quilted into a piece of cloth to prevent them moving about. A very useful splint may be made from the fresh bark of trees.

The pads are to be placed *under* the splints, to prevent injuries to the skin; and the bandages to be bound over the whole. (See p. 878.)

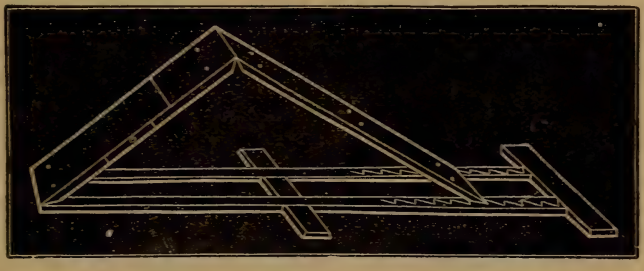
For some hours after a limb is broken, the parts continue to swell; and if bound up *immediately* with the pads, splints, etc., much needless pain will be occasioned. It is best, therefore, not to put these on under two or three days, but merely to lay the limb in a natural position, and perhaps lightly bind one splint to it. Broken ribs and collar bones are exceptions, and should be bound up immediately.

A broken arm lies easiest half bent, upon a pillow; the thigh or leg, upon the outside, with the knee bent.

When the apparatus is once adjusted, the less it is meddled with the better.

In fractures of the shoulder or arm, a sling is a contrivance of great importance. This, if well made and adjusted, keeps the broken bone in its place, and at the same time, allows the patient to take some exercise by walking about.

FIG. 149.



Beside the above contrivances, there is the *double inclined plane* (Fig. 149) for giving the leg the advantage of a bent position. There

FIG. 150.

are also *fracture-boxes* (Fig. 150), and *fracture-cradles*,—the latter to keep the bed-clothes lifted away from the painful limb. *Fracture-*

beds are now brought to great perfection, and one should, if possible, be procured when the patient is likely to be confined a long time with a compound fracture. The fracture-box, represented by Fig. 150, may be made from thin boards, by any carpenter. It has a hinge at the knee to enable it to fulfil the double purpose of a double-inclined plane and a fracture-box.

The Way in which Broken Bones Unite.

The union of broken bones is much slower than that of severed flesh. The ends of the bone being kept steadily together, they soon become surrounded by a swelling of the soft parts, which change to a sort of osseous substance, making a kind of bony hoop, to act as a splint or support, — nature not being willing to trust the surgeon to keep the fragments exactly in their place. This is called a *provisional callus*, because it only has a temporary use.

This First Stage lasts about ten days. At the end of this time, a spongy substance appears between the ends of the bone. This substance is not bone, but in the swelling around the fracture specks of bone begin to be deposited; the fibrine here poured out becoming first cartilage, and then receiving into itself phosphate of lime, it becomes bone. A similar work is going on within, in the part called the medullary membrane.

This Second Stage lasts from the tenth to the twenty-fifth day.

Then Begins the Third Stage, which goes to the end of the sixth or eighth week. During this period, the external swelling, and the internal medullary membrane, become completely ossified and firm; though the ends of the bone are *not yet* grown together.

The Fourth Stage goes to the end of the fifth or sixth month. During this time, the *external swelling*, or *provisional callus*, becomes covered with a *periosteum*, and the ends of the bones themselves are fastened together by a bony union.

The Fifth Stage extends from the fifth or sixth to the twelfth month. During this time, the ends of the bone become grown together so strongly that the bony ring, or provisional callus, is no longer wanted, and it becomes absorbed, and disappears, — in other words, having no further use for it, nature takes off her splint. The place where the fracture was, is now as strong as any other part.

Union in Compound Fractures.

The union of compound fractures takes place in a different way from that of the simple fracture, just described. In this case there is suppuration, and the bones remain disunited several weeks, and there is no provisional callus formed. But after some weeks, the ends of the bone *soften* and *granulate;* and when the production of pus declines, these granulations are gradually changed into bone.

Time Required for Uniting Different Bones.

Fractures of the arms unite sooner than those of the legs.

The ribs and collar bone unite with tolerable firmness in about a month; those of the arm in six weeks; of the thigh and leg in eight weeks. I only mean the firmness derived from the provisional callus.

A broken bone will unite much sooner in a healthy person than in an unhealthy one; much sooner in a young than in an old person.

As a general rule, the apparatus should be kept on thirty days in the case of children; forty days in that of adults; and much longer in that of aged persons.

False Joint.

The union of a broken bone is sometimes prevented by a frequent moving of the limb. The ends of the bone having failed to grow together, will sometimes become rounded and smoothed, uniting only by a kind of ligament, and acquire the habit of sliding upon each other, and thus form what is called a *false* or *artificial joint*, — the limb being permanently capable of bending, to some extent, at the place of the fracture.

Fractures of the Skull.

These are always dangerous in their nature, and the aid to be derived from surgery much less than in other fractures. If a fracture of the skull produce deep sleep, and snoring, and the patient does not show any symptoms of pain when pinched, etc., we are to infer that a piece of bone is pressed down upon or into the brain.

In this case, if the position of the blow be known, a cut is to be made through the skin, two or three inches long, down to the bone. If arteries bleed, they must be taken hold of with a pair of forceps, and tied with a silk thread, the ends of which are to be cut off. The bone being well exposed by one or two incisions, the piece which is pressed down upon the brain is to be raised with a chisel, or some similar instrument, to a level with the other bones. The surface must then be cleaned with a sponge, the hair around shaved off, the skin brought together, and the cut edges reunited by sticking plaster.

When the inflammation appears, twenty-four hours after, it is to be kept down by doses of from five to ten drops of tincture of veratrum viride, given every one or two hours.

Fractures of the Bones of the Nose.

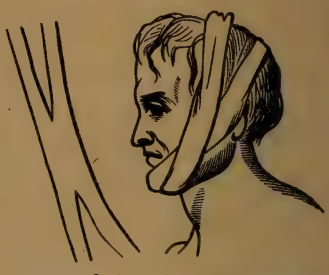
Injuries of this kind may generally be rectified by passing a strong probe up the nostril, and pressing out the bones to their natural place, at the same time using the fingers on the outside to prevent their being pressed out too far. Inflammation must be kept down by cloths wet in cold water and laid on, and by light diet.

Fracture of the Lower Jaw.

This usually takes place near the chin. It may occur also near the angles of the jaw. It may be simple or compound, and is known by the pain, the swelling, the inability to move the jaw, the indentation felt by the finger, the irregularity of the teeth, and the grating sensation felt while moving the jaw with the hand placed on the back fragment.

Treatment. — Let one or both thumbs be introduced into the mouth. With these, keep the back part of the jaw stationary, and pull forward the fore part with the fingers on the outside. In this way the fracture can soon be put right. This done, shut the mouth firmly, and place a thick compress of lint over the broken part; over this put a piece of pasteboard, wetted so as to bend easily to the parts, and over this a strong bandage of muslin, two and a half inches wide, with a small bag to fit and hold the chin; all which is represented in Fig. 151.

Fig. 151.



For a fortnight the patient must feed on gruel, broth, arrow-root, and milk, that the jaw may not be displaced by chewing.

Fracture of the Collar Bone, or Clavicle.

This accident generally occurs about the middle of the bone, and is generally caused by falls on the arm and shoulder.

Fig. 152.

Fig. 153.

Symptoms. — Pain and tenderness at the place of the injury, and inability to lift the arm; a small bunch or prominence at the point of

the fracture; the distance from the point of the shoulder to the breast-bone shorter than on the other side; and the dropping downwards, forwards, and inwards of the shoulder. To make the case sure, *compare* the two bones, and see whether they agree.

Treatment. — Place the knee between the shoulder-blades, and grasping the round ends of the shoulders with the two hands, draw them gently back till the ends of the bone come to their proper place; or, place the elbow of the patient close to the body, and a little forward, and then push it upward.

To retain the shoulders in this upward and backward position for some weeks, pass a flannel bandage, four inches wide, around the front of one shoulder, under the arm-pit, across the back, over the opposite shoulder, under the other arm-pit, and again across the back, in the form of the figure ∞. To prevent the bandage from cutting the skin, put pads under the arms. (Figs. 152 and 153.)

Fracture of the Shoulder-Blade.

When this accident happens, the body of the bone is generally broken across by some great direct violence. In a few instances, the end next to the collar-bone is broken.

Symptoms. — Great pain in moving the shoulder, and the *grating* sensation which may be felt by placing one hand on the upper end of the bone, and moving the lower portion with the other.

Treatment. — A bandage must be passed round the chest, and a few turns be made around the upper arm, so as to fasten it to the side, and prevent all motion. Purging, low diet, and the tincture of veratrum viride will be required to keep down inflammation.

Fracture of the Acromion, or the end of the scapula which unites with the collar-bone, may be known by the flattening of the shoulder, — the broken part being drawn down by the action of the deltoid muscle.

Treatment. — It must be supported by the same bandages as are used for a fracture of the collar-bone; and the elbow must be well raised, so that the head of the upper-arm bone may be lifted against the upper portion of the scapula, and act as a prop to keep it in place. No pad should be put in the arm-pit, for this would push the broken part too much outward.

Fracture of the Upper-Arm Bone.

The bone of the upper-arm is most frequently broken near the centre, though it may be fractured near the ends. It may be known by taking hold of the arm above and below the suspected fracture, and attempting to move the ends of the upper and lower fragments upon each other. If there be a fracture, the grating of the broken ends against each other will either be heard or felt. The arm will

also be bent and helpless; and if the ends of the bone be slipped by each other, it will be shortened.

Treatment. — Let a powerful man take hold of the arm and pull gently and gradually, but with considerable force, till the arm is brought to its natural length, — another man taking hold of the body of the patient, and pulling in an opposite direction. In the mean time, the surgeon is to adjust the ends of the bone to each other, and apply a bandage, but not very tightly, from the elbow to the shoulder, and over this, four splints, with pads under them; one in front, reaching from the shoulder to the bend of the elbow, with a few turns of the bandage over it; another behind, reaching from the shoulder to the point of the elbow, with a few turns of the bandage around it, also; another on the inside, extending from the arm-pit to the inner projection of the bone at the elbow, also secured by a few turns of the bandage; and the fourth one on the outside, reaching from the shoulder to the outside knob at the elbow. The whole is now to be secured either by a bandage or tape. (Fig. 154.) The arm is to be confined to the side, and the hand and fore-arm placed in a sling. In from seven to ten days, the dressing should be taken off to see if all is right.

Fig. 154.

Fracture of the Elbow.

This may be known by the patient being able to bend the arm, but not straighten it, and by the grating which may be heard or felt when the arm is moved back and forth by the operator, and also by the severe pain felt in the fractured part.

Treatment. — First apply leeches and evaporating lotions to reduce the inflammation. When this is effected, straighten the limb, and apply a bandage snugly from the fingers to the elbow. The broken end of the bone must now be brought to its place, and the bandage continued over it, and for a few inches above it. Secure it here, and bring it back, — carrying it above and below the elbow for several times; and then extend it up to the shoulder. A splint must now be applied to the inner side of the arm to prevent its being bent, — extending from the hand nearly to the shoulder, and another, of similar shape, to the outside. The joint should be kept quiet for four or five weeks, — during which time, the splints may be taken off three or four times, to see if there is any chafing of the skin, or any disturbance of the bones.

Fractures Between the Elbow and Wrist.

The part of the arm between the elbow and wrist, called the *fore-arm*, has two bones, — one extending from the elbow on the inside to the wrist at the root of the little finger, called the *ulna*, and the other,

on the side next the thumb, a shorter and a smaller bone, and called the *radius*.

When both these bones are broken at the same time, the fracture may be easily discovered; when only one, the sound bone keeps the other in place, and the injury is not so easily made out.

Treatment. — Relax the muscles by bending the elbow, and then, by extension and counter-extension, put the ends of the bones in proper place, and then place two splints thickly padded in the centre, one upon the front of the hand and fore-arm, and the other upon the back of the hand and fore-arm, — the palm of the hand being turned, not towards the chest, but downwards. They are to be covered with a bandage from the fingers to the elbow. The whole arm and hand should be placed in a sling, and remain in this position four or five weeks.

Fractures of the Wrist, Hands, and Fingers.

The setting of fractured bones in these parts is to be done by extension and counter-extension, as in the case of other bones.

If the wrist be broken, a splint should be applied in front and one behind, and a bandage bound tightly from the hand half way to the elbow.

In fracture of the bones of the hand, a pad or compress must be put upon the palm of the hand, and a splint placed over this, with a bandage extending from the wrist to near the ends of the fingers.

If one finger only be broken, apply narrow paste-board splints on four sides, and cover them with a narrow bandage; and then bandage the whole hand.

In all these fractures, place the hand in a sling. About three weeks will be required for the bones to unite properly, and several weeks for the parts to acquire their natural usefulness.

Fracture of the Ribs.

This accident occurs either by blows, or by being crushed between two opposing forces. One, two, or more ribs may be broken at a time, according to circumstances.

Symptoms. — A fixed, piercing pain, made worse by breathing, coughing, or any other motion, and also a grating sensation during the taking of a long breath, the hand being laid upon the injured part at the time.

Treatment. — The ribs are to be held steadily in their place by pressure. To effect this, request the patient to draw in a long breath, and hold it. While the ribs are swelled out in this way, and the broken ends are thus brought to their proper place, pass a woollen bandage, five or six inches wide, several times tightly around the chest, from the arm-pits to the pit of the stomach. This will confine

the muscles of the chest, and the breathing will have to be done with the muscles of the belly, and the ribs will thus be kept still, and have a chance to grow together.

If the pleura be wounded, and inflammation follow from this or other cause, the patient must be confined in bed, kept on a low diet, and his pulse be kept down by tincture of veratrum viride. The bowels should be emptied by recipes 18, or 20, or 27, or 41, both to subdue inflammation, and to give the diaphragm a chance to drop down freely.

Fracture of the Breast-Bone.

Symptoms. — The injured part is frequently either sunk down or raised up; there is difficult breathing, cough, spitting of blood, pain, inability to lie on the back, and a grating noise caused by breathing.

Treatment. — The same as that for broken ribs. Should the broken part be pressed down upon the lung, so as to cause serious difficulty of breathing, an incision may be made, and the broken piece raised up with a chisel, or stiff case knife, or some similar instrument.

Fracture of the Haunch Bones, or Pelvis.

These fractures are dangerous, — being often connected with some other injury, as tearing of the bladder, lower bowel, or great veins or arteries. Fortunately, however, they are only caused by some great violence, and do not often occur.

Treatment. — Place the patient in the easiest possible position, and keep him entirely at rest. Generally a catheter should be kept in the bladder, that the water may pass off easily; and the whole hips should be bound round tightly with a flannel or calico bandage, and made as firm and fixed as possible, to keep the broken bones together. The most perfect rest must be ordered for six weeks or two months.

If the extreme lower end of the sacrum, the *os coccygis* (Figs. 8—3) be broken, the separated portion must be put in its place by introducing the finger into the rectum; and the bowels must be kept loose by gentle physic, that the broken bone may not be pushed from its place by the pressure against it of hard stools.

Fracture of the Thigh-Bone.

The points where this bone are broken are at its upper portion or neck, and near its middle. The break at this latter place may be straight across, or oblique, — partially lengthwise. When oblique, the point of the bone may stick into one of the large muscles, and be made fast by it.

Symptoms. — The fracture in the middle of the bone, if it be transverse, may be known by some swelling or irregularity discovered by running the hand along the thigh, and grasping it here and there;

and if it be oblique, the ends of the bone will be drawn by each other, and the limb will be shortened.

Treatment. — Place the patient on his back, and let two strong men use extension, — one taking hold near the hip, and the other grasping the limb at the knee and pulling steadily and strongly till the limb is of the proper length, and the ends of the bone are in their place. The man who takes hold of the upper end of the limb may hold it more firmly and with less fatigue by passing a folded sheet around the groin.

The extending force being still continued, the operator is now to apply the splints, which are to be four in number, — one in front, reaching from the knee-pan to the groin; one behind; one on the inside, from the upper part of the thigh to the inside of the knee; and a fourth one, about four inches wide, reaching from the arm-pit to a distance of two or three inches beyond the sole of the foot. Cotton must be placed under these splints to prevent their injuring the skin, and they must be of a width to nearly, but not quite, touch each other. These being properly adjusted, and the extension still continued if the fracture is oblique, the bandage is now to be firmly applied from the foot to the upper part of the thigh, and then passed a few times around the body. This fracture is sometimes treated without splints, as represented in Fig. 155.

Fig. 155.

Fig 156

Six or seven weeks will be required for the bones to grow together, during which time the patient will need to lie upon his back. But the dressing may now and then be taken off and put on again.

Sometimes only a single long splint is used; sometimes no splint; in still other cases, four splints, — the outside one being short, and the limb resting on a double inclined plain.

Fracture at the Neck of the Bone. — When the bone is broken at the neck, close to the hip joint, the injury is known by the knee and foot turning *outward*, and by the limb being an inch or two shorter than the other (Fig. 156). This is an accident to which old persons are particularly liable. When the bone is broken here, it seldom grows together again. The union which is formed is generally by a ligament.

Treatment. — This requires a very long splint, reaching from the armpit to beyond the sole of the foot, and bound firmly with a bandage, as in fracture in the middle of the thigh. The limb should be kept extended, and the injured one must be bound to the other by a bandage, keeping both legs straight and immovable. A broad leather strap, bound firmly round the hips and thighs, will be serviceable.

Two or three months will be required for the injury to become repaired, so that the limb may be used. The patient must get up cautiously, and be careful not to use the limb much so long as pain is produced. (See p. 877.)

Fracture of the Knee-Pan.

The knee-pan (patella) may be broken up and down, or across; — the latter fracture is the more common. It is a troublesome fracture, and is very apt to leave a *stiff knee*.

Symptoms. — When the bone is broken across, the patient cannot stand upon the limb; the leg may be flexed or crooked, but cannot be straightened; the upper part of the knee-pan is drawn up away from the lower portion, leaving a wide gap, into which the fingers may be laid, — at the top and bottom of which the rough edges of the movable bones may be felt.

Treatment. — First, reduce the inflammation by tincture of arnica, leeches, etc. Then straighten the limb, and put a well-padded splint behind, to keep the knee motionless; place the patient's body in a half-sitting posture, and raise the foot considerably above a level. Put a bandage over the splint, beginning half way up the thigh, and extending down to the knee-pan, and being made very tight just above the broken bone, so that it cannot easily slip under it. The broken bones must now be brought together, and the bandage be passed below and again above the knee several times in the form of a figure 8, to keep the bones from parting.

The bandage, generally, may not be removed for a fortnight. After this period, if everything has gone on well, the limb may be carefully bent a little every day, to avoid a stiff knee.

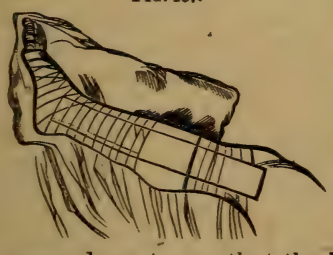
Fracture of the Leg.

The *leg* is that part of the limb between the knee and ankle. It has two bones; the smaller on the outside, called the *fibula;* the larger on the inner and front side, called the *tibia*, or shin bone.

One or both of these may be broken at the same time. If both are broken, it is impossible to walk upon the limb; there is a change in its shape; it may be bent; and the grating of the broken ends of bone may be felt or heard.

Treatment. — First, adjust the bones by means of extension and counter-extension, as in other fractures. Then apply two splints, one on the outside from the knee to the sole of the foot; the other upon the inside. Over these a bandage is to be firmly applied, reaching from the toes to the knee. The leg may rest upon the side or the back, as the comfort of the patient may require. Upon the side is generally the easiest position, with the knee a little bent (Fig. 157).

Fig. 157.



The dressing may be removed in six or seven days, to see that the bones are in their proper place. Five or six weeks will be required for recovery; and at the end of this time, the dressing may be laid aside. But the patient must use his leg very gradually.

One of the simplest methods of treating a fractured leg is to place it in a fracture-box. A pillow is to be placed in this, and the leg, the bones being put in place, is to be placed in the box, and the foot to be secured to the foot-board by a bandage, and the sides of the box, movable upon hinges, are to be brought close enough to the limb to keep the bones in place, — compresses, etc., being placed around the limb as required. Bran may be placed in the box in place of a pillow.

Fractures of the Bones of the Foot.

These are to be treated in the same manner with fractures of the hand. They are often attended with much other mischief, as laceration of the flesh, ligaments, etc. Hence, cutting off the foot, or a part of it, is often necessary. Paste-board splints are frequently used in these fractures. If matter forms, it must be let out by opening the parts.

Compound Fractures.

When, in connection with a broken bone, there is a wound of the flesh, which leads to, and communicates with the space between the broken ends of the bone, the whole injury is called a *compound frac-*

ture. The wound in the flesh may be caused by the same force which breaks the bone, as a bullet from a gun, or a cart-wheel, or some machinery in which the limb is entangled. Quite often the flesh wound is caused by one of the ends of the bone being forced through the flesh and skin.

But, however caused, a compound fracture is of a much more serious nature than a simple one; and it is particularly dangerous when a joint is involved. It is more serious above the knee and elbow than below, and more to be dreaded in the lower limbs than in the upper.

Treatment. — An attempt should generally be made to preserve the limb; it should not be cut off, unless the compound fracture is of the worst kind. But if there be no hope of saving the limb, the amputation should be performed at once, while the constitution is tranquil, and before it has been shocked and injured by the sympathetic fever, suppuration, abscesses, and hectic, which are almost sure to follow such grave injuries.

But, suppose it be determined not to cut the limb off, — as it generally should be, — the first thing is, after the bone is set, to close the wound against all entrance of air, and to cause it to heal by the first intention, that is, without suppuration. To do this, one method is to cover the wound with lint dipped in blood; but the more usual mode is, to bring the sides of the wound together, and secure them very carefully by strips of adhesive plaster, in the same way as in common cuts. The bandage should be kept wet with cold water, by squeezing a sponge over it, or by sprinkling cold water upon it as fast as it becomes dry.

It will be necessary, in this case, to keep the bed-clothes away from the limb while it is thus wet, which may be done by cutting a barrel hoop in two, and nailing it to two pieces of lath. There should be air circulating under the sheet, that the heat of the inflammation may not keep the limb in a steam-bath.

Should the wound heal by the first intention, the danger will soon be over, and the treatment may be the same as for simple fracture. But this, unfortunately, does not often occur.

It more often happens, that after three or four days, the patient grows restless, has very short and disturbed sleep, is hot and thirsty, has headache and shivering fits, is more ill towards evening, wanders in his mind, or becomes delirious, and perhaps dies in ten days or a fortnight from these constitutional disturbances. If the symptoms are a little less severe, the wound will at first discharge a small quantity of dirty, bloody matter, which, if everything goes well, will, by degrees, change to healthy matter, without smell, of a straw color, and about as thick as cream.

The fever, and other bad symptoms, will now subside; the sleep and appetite come back, and a new process begins, that of healing by *granulation*, or the formation of new flesh to fill up the gap made by the wound.

For old persons, or those whose health has been broken, this stage

is full of danger, and is apt to result in death, if the lower limb be the injured part.

If the constitution proves unable to bear up against this stage of the injury, alternate heat and sweating set in, the face is flushed with a pink color, the pulse becomes weak and quick, the body wastes, the appetite disappears, the tongue becomes dry and brown, restlessness, wandering, and delirium, follow in quick succession, and all are speedily terminated by death. With the setting in of these symptoms, the wound stops discharging, or throws out only a thin, watery and stinking matter. Quite often the skin and other parts mortify, and if there be strength enough to throw off the dead parts, the broken ends of the bone stick out, looking dead and white.

When the constitutional symptoms begin, apply poultices, to set up, if possible, the formation of good matter; for if this can be brought about, the symptoms may be regarded as favorable. The poultice must be continued till the wound is filled with new flesh nearly to the surface.

In the First Stage, the medical treatment must have reference to checking the inflammatory condition. This may be done by full doses of tincture of veratrum viride. Should the symptoms take a typhoid type, and the powers of life seem to sink, then quinine, and iron, and bitters will be needed.

In the Second Stage, whatever inflammation there is depends on exhaustion, and everything fitted to prop and fortify the constitution, as brandy, wine, broth, and easily digested, nourishing food, must be freely given.

Dislocations.—Luxations.

The surfaces where two bones meet and glide upon each other for the purposes of a joint, are called *articular surfaces*, and the union is said to be an *articulation*. These surfaces are covered by a smooth cartilage, to render their play upon each other easy.

The joints are held together by cartilaginous straps and ligaments, which serve as pullies; by the aid of these, the joints turn back and forth, as a door opens and shuts upon its hinges.

When by some external violence, or the weakening of these ligaments, these surfaces are suddenly separated, or forced apart, there is said to be *dislocation* or *luxation*.

Joints are divided into two kinds, the ball and socket (orbicular) which has a rotatory motion, as the shoulder, hip, thumb,—and the angular, or pump-handle (ginglymoid), as the elbow and knee.

The ball and socket joints have a greater diversity of motion, and are more exposed to dislocation. They are likewise more easily put in their place.

In a Primary Dislocation, the bone is thrown at once into the place where the surgeon finds it.

The Secondary Dislocation is one in which the muscles pull the

head of the bone still further from its natural place than it was thrown by the first shock of violence.

A Dislocation is Simple when there is no wound penetrating the synovial membrane.

It is Compound when attended by such a wound.

A Dislocation is Complete when the articular surfaces are entirely separated.

It is Incomplete when the separation is only partial.

Recent Dislocations are rectified with comparative ease.

Old Dislocations are hard to be repaired, and sometimes cannot be reduced at all.

The Symptoms of Dislocation are, inability to use the joint; the head of the bone being felt in an unnatural place; the limb shortened, lengthened, or distorted; a change in the shape of the joint, etc.

Simple dislocations are generally trivial. Compound dislocations often render amputation necessary, and are always perilous.

Aged persons are less liable to dislocations than the young.

When a dislocation and a fracture occur at the same time, the dislocation is to receive attention first.

A dislocation is to be reduced by a *gradual* and *continuous* extending force. The reduction is known by the limb recovering its natural length, shape and direction, and by its being able to perform certain motions which are not possible while in a dislocated state. The pain is immediately reduced upon reduction taking place. In shoulder and hip dislocations, the head of the bone makes a loud noise when it slips into its place.

Dislocation of the Lower Jaw.

Gaping very wide is the usual cause of this. It has been known to result from a mere yawn. One or both sides may be disjointed.

Symptoms. — If but one side is dislocated, the chin is twisted to one side, and immovable, and the jaws are partially open; if both sides, the mouth is wide open, the chin projects, there is a hollow in front of each ear, great pain, inability to speak, and dribbling of spittle from the mouth.

Treatment. — To effect a reduction, cover the thumbs with a towel or a piece of wash-leather to prevent their being injured by a sudden snapping together of the jaws, and then, standing in front of the patient, introduce them into the mouth, press them upon the crown of the back lower teeth, at the same time lifting the chin with the fingers.

After the jaw is set, it should be kept bandaged for a few days, — the bandage being merely passed once or twice over the top of the head, and under the chin. No solid food requiring chewing should be taken for a short time.

Dislocation of the Collar-Bone.

This may take place by the end attached to the breast-bone slipping *over* or *under* that bone, or by the *other* end slipping *above* or *below* the bone to which it is attached. When the first named end of the bone slips *over* the breast-bone, it is said to be a *forward* dislocation; when it slips *under* the breast-bone, it is *backward*. In this latter form of dislocation, the end of the collar-bone sometimes presses upon the gullet, and prevents swallowing.

Symptoms. — In the *forward* dislocation of the inner end of the bone, a *bunch* may be felt by the hand at the top of the breast-bone; in the *backward dislocation*, a *depression* or *hollow*. The *upward* dislocation of the *outer* end of the collar-bone, may be known by the flattened and sunken condition of the shoulder.

Treatment. — To put the bone in its place in the first of these accidents, draw the shoulders back, by which means the collar-bone (clavicle) is drawn away from the breast bone (sternum), and easily slips into its place. To reduce the dislocation at the other end of the bone, place the knee between the patient's shoulder-blades (scapulæ), and draw his shoulders *backwards* and *upwards*. After the reduction, support the arm in a sling.

Dislocation of the Shoulder-Joint.

The head of the long bone of the arm (humerus) may be displaced in three different directions, — *downward*, into the arm-pit (axilla); *forward*, under the muscles of the breast; and *backward*, upon the back of the shoulder-blade.

Fig. 158.

It is recognized by the shoulder losing its roundness, and becoming flat; by the lengthening of the arm; by the head of the bone being felt in the arm-pit; and by severe pain.

To effect the reduction in the first form of displacement, put the patient on a bed, or upon the floor. Put one heel in the arm-pit, against the head of the bone. Then, taking hold of the arm above the elbow, or at the wrist, pull steadily, and push with the heel. (Fig. 158.) The extension may be more steady and powerful by a double towel around the surgeon's neck.

If the reduction cannot be effected, relax the muscles by a warm bath, or by nauseating doses of tartar emetic.

After the reduction, a sling will be required, and three weeks' or a month's rest.

Dislocations of the Elbow Joint.

Of these there are six varieties. In the first, both bones of the fore-arm (radius and ulna) are thrown *backwards;* in the second, both are drawn *backwards* and *inwards;* in the third, both are thrown *backwards* and *outwards;* in the fourth, the *ulna alone is forced backwards;* in the fifth, the *radius is forced forwards;* and in the sixth, the *radius is thrown backwards.*

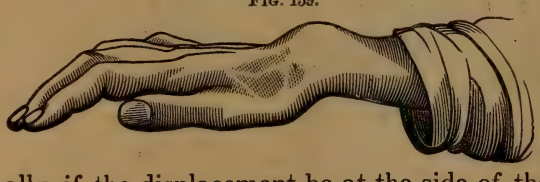
In general, these dislocations are all easily set. In the first four, the knee is to be placed at the bend of the elbow, and the fore-arm bent upon it, the surgeon grasping the upper arm with one hand, and the fore-arm with the other. In the dislocations of the radius, the upper arm is to be put in a *fixed* condition, while the surgeon takes hold of the hand and pulls, at the same time throwing the bone forward. If the luxation be backwards, there must be the same extension and counter-extension, while the fore-arm is bent.

Treatment. — The fore-arm must be placed in a half-bent position, and a splint should be bandaged upon the front of the whole limb, compresses being placed upon the head of the bones opposite the direction of the dislocation. This confinement must be continued three weeks.

Dislocations of the Wrist.

These are caused by falls upon the hand. Both the radius and ulna may be thrown *backwards* or *forwards* upon the wrist, causing a projection either in front or behind. (Fig. 159.) The bones are to be set by pulling in opposite directions upon the hand and the fore-arm, and pressing laterally, if the displacement be at the side of the wrist.

Fig. 159.



Treatment. — Put a straight splint on the front, and another on the back of the fore-arm and hand, with compresses on both sides of the wrist, and a bandage over the whole. Support the fore-arm in a sling, and keep down inflammation by cold water, cooling lotions, etc.

Dislocations of the Bones of the Hand.

Some one of the carpel bones may be pushed up out of its place, so as to form a projection on the back of the hand. To put it in its place, press upon it simply, and then put compresses on the front and back, with straight splints upon these and a bandage over all. Put the hand in a sling.

Dislocations of the finger joints may generally be replaced by bending the displaced phalanx over the head of the bone from which it has been disjoined. Sometimes a good deal of extension and counter-extension are required, for which purpose a piece of cord may be wound around the finger, — the skin being protected by covering it with a piece of wetted buck-skin.

Dislocations of the Hip-Joint.

These are four in number, — *upwards*, *downwards*, *backwards and upwards*, *forwards and upwards*.

To reduce these, a greater amount of power is needed than in the dislocations of any other bone, — owing to the greater power of the muscles which are to be overcome.

Fig. 160

Fig. 161.

Dislocations of this joint are often confounded with fracture of the head and neck of the thigh bone. This latter may be distinguished

from the luxation by the grating sound to be heard, by the possibility of pulling the limb out to its natural length, and by its being shortened up again by the action of the muscles the moment the pulling is given up.

The Upward Dislocation of the head of this bone upon the back of the haunch bone, is known by the *shortening* of the limb, and by *the knee and foot turning inward*, — the foot lapping over the opposite foot, and the great toe resting upon the other instep. (Fig. 160.)

The Dislocation Downward is known by the *lengthening* of the limb, the projection of the knee, *the turning of the foot and knee outward*, and the bending of the body forward. (Fig. 161.)

The Dislocation Backward and Upward is distinguished by the *inclining of the foot and knee inward*, the drawing up of the heel, and the resting of the great toe against the ball of the great toe of the other foot. (Fig. 162.)

FIG. 162.

FIG. 163.

The Dislocation Upward and Forward is known by the shortening of the limb, and the *turning of the foot and knee outward.* (Fig. 163.)

For replacing the bone, put the patient upon a table, on his back Draw a sheet between his thighs, and, extending it up by the side of his body, let it be fastened to a staple. Put a padded belt, with rings

attached, around the injured limb, just above the knee. To these rings, fasten one block of a pulley, and attach the other to a post, giving the pulley-rope to an assistant. The surgeon now standing on the injured side, directs gradual extension to be made, while he, by his hands, or by a band passing around the injured thigh and over his own shoulders, lifts the head of the bone, and guides it into its socket.

Treatment. — Keep the patient in bed for two weeks or more, with his knees tied together by a strip of muslin, and a broad belt around his hips.

Dislocations of the Knee-Pan or Patella.

This bone may be thrown *outward*, causing a great projection on the outside, and an inability to bend the knee.

It may be thrown *inward*, causing the same impossibility to bend the knee, and a projection on the inside.

To restore the bone to its place, put the heel of the patient upon the shoulder of an assistant; then press down the edge of the knee-pan which is farthest from the centre of the joint, thus tilting up the other edge of the bone, when the muscles, aided by a lateral pressure, will draw it to its place.

Treatment. — Put a straight splint upon the back of the limb, and make moderate pressure upon the knee by a bandage. Cold water, or cooling washes, should generally be applied. Keep the patient in bed two weeks.

Dislocations of the Knee-Joint.

There are four of these, — *forward*, *backward*, *inward*, and *outward*.

They are readily corrected by extension and counter-extension from the ankle and thigh, and pressure upon the head of the displaced bone.

Treatment much the same as for displacement of the knee-pan.

Dislocations of the Ankle.

These may occur in a *forward*, *backward*, *outward*, and *inward* direction. (Figs. 164 and 165.)

To rectify it, bend the limb, so as to relax the muscles on the back of the leg; then, while extension and counter-extension are made upon the foot and thigh, press firmly on the dislocated bone, and thus force it to its place.

Treatment. — Confine the foot and leg in splints made of thick paste-board, soaked in hot water, and moulded to the shape of the limb, with a foot-piece at right angles. Keep the patient in bed five

or six weeks, and when he begins to walk, support the ankle with a roller bandage, or a laced gaiter.

Fig. 164.

Fig. 165.

Contusions.—Bruises.

When any blunt, hard substance comes in violent collision with the soft parts of the body, without breaking the skin, the injury received is called a *bruise*. One of these accidents generally ruptures a great number of the very smallest blood-vessels, which let out blood under the skin, producing "*black and blue*," or livid spots (ecchymosis). What *fist-fighters* call a *black eye* is an example.

Treatment. — Cold applications at first to prevent the blood running out of the small vessels under the skin. After the inflammation has subsided, stimulating applications, as vinegar and water, alcohol, camphorated liniment, ammoniæ and alcohol, equal parts, and sometimes bandages.

Sprains.

A sprain is a forcible wrenching and twisting of a joint to such a degree as to stretch and more or less lacerate the ligaments of the part, and sometimes to break a tendon, but without entirely displacing a bone. Its symptoms are, violent pain, swelling, and discoloration of the parts from the blood running into the cells under the skin. In elderly persons, the effects of sprains are very tedious, disabling them for many weeks, or even months.

Treatment. — Elevate the limb, keep the joint perfectly quiet, and apply cold lotions, or fomentations. When the inflammation is all

past, apply stimulating liniments, and bandages, or shower the part with cold water.

Ruptures of Tendons.

These accidents are known by a sudden snap, followed by pain, loss of motion in the part, and swelling and discoloration.

Treatment. — Place the part in such a position as to relax the broken tendon, the ends of which must be brought together, and retained in contact till they grow together.

Diseases of the Bones.

The bones are supplied with blood-vessels and nerves; and as they live and grow like other parts of the body, so they become diseased and die in like manner.

Ulceration of Bones. — *Caries.*

Bones, like the soft parts, when attacked by violent inflammation, may ulcerate, discharge matter, and heal by granulation; or, having lost a portion of their substance, may sink under entire disorganization and death. This disease passes in some parts of the country, under the name of "fever sore."

Treatment. — Apply splints, and keep the part in a state of absolute rest. Subdue the local inflammation by the usual means. If the disease arise from scrofula or syphilis, use the remedies for those diseases.

Death of the Bones. — *Necrosis.*

This is like mortification of the soft parts. It occurs from injuries and inflammation of the periosteum.

It is known by dull, deep-seated — sometimes acute — pain; and is followed by increase of size, from the formation of new bone around the old, — the old being gradually broken into pieces, and discharged through external openings.

Treatment. — Poultices and quieting fomentations.

Unnatural Growth of Bones. — *Exostosis.*

This disease consists either of a tumor of a bony nature, growing upon and arising from a bone, or an enlargement of a bone. It springs from the periosteum, or from the surface of a bone, or from its spongy texture. The enlargement or the tumor may be white and hard, like ivory, or dark-colored and spongy, or a mixture of the two.

At first, a tumor of this kind is not attended with pain or inconvenience. It comes on slowly, and sometimes remains nearly stationary for several years.

Treatment. — If the tumor be large and inconvenient, remove it with the knife. If not, use local pressure with pads and bandages; also leech, blister, and restrict the patient to a spare diet.

Diseases of the Joints.

Some of these diseases begin in the cartilages, some in the synovial membrane, and others in the heads of the bones.

Disease of the Hip-Joint. — *Coxalgia.*

This generally consists in inflammation of the synovial membrane and capsular ligament of the hip-joint, ending frequently in ulceration and destruction of the head and neck of the thigh bone.

The symptoms are fulness in the groin; pain, which is increased by motion; aggravated when the limb hangs without touching the ground; is more felt in the knee than in the hip itself; and shoots down along the inside of the leg, as far as the instep. The thigh inclines forward, and the limb has the appearance of being longer than the other, — though in the latter stages, it is really shorter.

Treatment. — Before suppuration takes place, apply leeches and blisters, and enjoin perfect rest. After suppuration, keep the patient upon his back, on a mattress, and mould to the parts thick pasteboard splints, with pads, and give tonics. Keep the bowels open with senna and bicarbonate of potash, and rub the parts with iodide of potassium ointment, or with preparations (282) (283) (195). The disease being scrofulous, the iodide of potassium (140) may be taken with advantage internally.

White Swelling.—Synovial Degenerations.

There are several diseases of the knee-joint, characterized by swelling and white color from tension of the skin, which have passed under the common name of *white-swelling*. The diseases are not strictly the same, but as they all affect the knee, and have symptoms to some extent in common, it is well enough to group them under the same title, — especially as one treatment is adapted to all.

One is a pulpy disease of the synovial membrane. It begins with a trifling stiffness, and a slight swelling. The swelling increases by degrees, and on touching the part, there is a sensation as if it contained fluid. By and by the cartilages ulcerate. The disease is incurable, as the synovial membrane is finally converted into a pulpy substance, and the limb has to be amputated.

Another of these is inflammation of the synovial membrane, beginning with ulceration of the cartilages. It begins with pain in the

joint, which is severe at one point, and attains its height in a week. In a day or two, the joint is swollen from a collection of water.

Treatment. — Splints and entire rest, as in all chronic diseases of the joints. Also a generous diet, and whatever is calculated to build up the health.

Bunions.

This is an inflammation, enlargement, and hardening on the inside of the ball of the great toe. It is frequently connected with a distortion of the toe, which seems partially out of joint. The projection of the joint exposes it to great irritation from the shoe, and to repeated attacks of inflammation. It occasions great suffering.

Treatment. — Remove the pressure from the part, and when there is inflammation, keep the foot quiet and elevated upon a chair, applying leeches, poultices, etc. Another method is to cover the bunion with soap plaster, spread on thick, soft leather, or, put the toe in a separate apartment of the stocking, like the finger of a glove. Then enclose it in a separate part of the shoe, which is contrived by fixing a piece of firm sole-leather in the bottom of the shoe, so as to make a separate compartment for the toe. By this means the pressure against the side is removed. Sticking plaster may be spread on wash-leather, and a piece cut out the size of the bunion. This will take off a portion of the pressure of the shoe, and will hasten the cure.

Fig. 166.

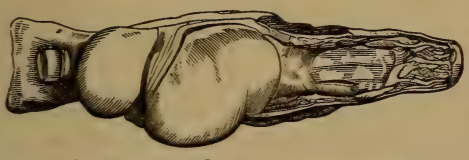


Fig. 166 represents a ganglion or tumor formed upon the synovial sheath of the tendon which bends the finger.

Whitlow.—Felon.—*Paronychia.*

This is an abscess of the fingers, of which there are three kinds, — the first situated upon the surface of the skin, the second under the skin, the third within the sheath which contains the tendons of the fingers, and sometimes involving the covering of the bone.

The latter form of the disease is the most terrible, and begins with redness, swelling, and a deep-seated and throbbing pain, which gradually becomes so excruciating as to banish all sleep, and nearly drive the patient to distraction. Finally, matter forms and burrows in the deeper parts of the finger, and at length finds an opening, which brings relief.

Treatment. — Carry the hand in a sling; apply a leech or two, and use poultices. A poultice made of equal parts of powdered slippery-elm bark, poke root, ground flax-seed and lobelia seeds, mixed with hot ley, and changed twice a day, is an admirable application.

When these methods fail to stop the progress of the abscess, the finger should be laid open with the scalpel, cutting down to the bone. This will give vent to the matter, and the wound may be dressed with poultices, until the inflammation is subdued, and the healing process is well established, when some simple salve may be applied.

Chilblains.

This complaint should have been spoken of immediately after "frost-bite," but it was forgotten. It is caused by exposure to cold, and affects the fingers, toes, and particularly the heels, with a painful inflammatory swelling, of a red, purple, or bluish color. The skin may be red in patches, and slightly swelled, with itching, tingling, pain, and lameness; or there may be blisters, around which the skin is blue or purple; or, worse yet, there may be ulceration and sloughing.

Treatment. — Stimulating liniments are the remedies usually employed for this complaint. One of the best consists of six parts of soap liniment, and one part of tincture of Spanish flies; and another excellent one is prescription (307). If there is ulceration, use Turner's cerate, or the resin ointment.

Stiff Joint. — *Anchylosis.*

This is of two kinds, *complete* and *incomplete*, — complete when the bones of the joint have become firmly united by bony matter, and incomplete when the motions of the joint are very much interrupted, but not entirely destroyed. The first is the result of ulcerations of the cartilages of the joints, and of the heads of the bones; the latter, of fractures, sprains, bruises, thickening of the synovial membrane, and weakening of the muscles.

Treatment. — No treatment is of much use in the first-named form of the disease. By sawing through the bone, and then daily moving the limb back and forth, a false joint may be made, but it is apt to grow together again, and finally defeat the purpose of the surgeon. When, however, stiffness arises from the weakening of the muscles, and some other causes involving the ligaments and tendons, something may be done by daily frictions with stimulating liniments, champooing, and warm fomentations; and by gently bending the joint back and forth, several times every day, as much as can be done without pain.

Tumors.

A tumor is a swelling which consists of a *new production, not constituting any portion of the original structure of the body.* There are several kinds of tumors; but it is sufficient for my purpose to follow Mr. Ferguson, and divide them into the *malignant* and *non-malignant.*

Cancer.

This belongs to the class of malignant tumors. It has two stages. The first is that of *induration* or *scirrhus*, — during which it has, under the finger, the feeling of *stony hardness*. The second stage is that of *ulceration* or *open cancer*.

Cancer most often attacks the female breast, the skin, the mucous membranes, the tongue, the stomach, the neck of the womb, the lips, etc. It rarely occurs in subjects under thirty years of age, and not often in persons under forty-five.

The Symptoms of Cancer, when it appears in the breast, are, a puckered condition, and dull, leaden color of the skin; a hard, knotty, and uneven feel; and occasional sharp pains. When it attacks the skin and mucous membranes, there is a hard, warty lump, which ulcerates, after a time, producing an open sore, with a hard base. (Fig. 167.)

Fig. 167.

The sore of a cancer discharges an irritating, excoriating matter, which has a peculiarly fetid odor, so offensive and so different from any other smell, that it is seldom forgotten. The bones of a cancerous person break with great ease. Unmarried females are much more liable to the disease than the married. The cancerous growth is composed, in part, of cells, rounded or caudate, containing, as seen under the microscope, nuclei, younger cells, and granules. (Fig. 168.)

Fig. 168.

Fig. 169.

Fig. 170.

The difference between these cells and those of common pus globules may be seen by comparing Fig. 168 with 169, — the latter being pus corpuscles highly magnified by a powerful microscope. Fig. 170 represents pus globules not so much magnified.

Treatment.— There are but two methods of treatment which promise any success. The first is to extirpate the tumor by a surgical operation before the disease has so far invaded the constitution as to be sure of returning. The other is that adopted by Dr. J. W. Fell,

an American physician, who was permitted to try his remedies in one of the English hospitals, and who drew from the surgeons in charge of it a favorable report of the results.

Dr. Fell's remedies are mainly blood-root and chloride of zinc (336) made into a paste. The skin over the tumor is first destroyed, and this paste, spread upon strips of linen, is applied. This causes an eschar, into which incisions are made, half an inch apart, taking care to avoid the living tissue. The same paste spread in a like manner is then daily inserted into the furrows. By this means, which is original with Dr. Fell, the effect of the caustic penetrates through all parts of the tumor, causing the whole diseased mass to fall off, and leave a healthy, granulating surface.

In incipient cancer, where the disease has not made much progress, Dr. Fell uses the above, which he calls a brown ointment (336), and in connection with it an ointment of the iodide of lead (337), using each twelve hours. With these, he claims that he cures incipient cancers, with great readiness. He also employs, internally, half-grain doses of pulverized blood-root (143), with arsenic and cicuta.

Dr. Fell claims that with these preparations, he has often cured *lupus*, and has been very successful with them in treating indolent ulcers.

Soft Cancer.—Bleeding Cancer.

Medullary Cancer.—Encephaloid Tumor.— Fungus Hematodes.

This varies in size from a nutmeg to a child's head. Its color varies from white to deep red. At times, it is soft and elastic at first; at other times, it is firm and tense. The patient is wan and pale from the beginning. The parts do not ulcerate, as in scirrhus; but after the skin is broken, a spongy bleeding tumor protrudes.

Treatment.— Dr. Fell's method.

Black Cancer.— *Melanosis.*

This is an organic disease, in which the tissue of the disordered part is converted into a black, hard substance, which is converted into ulcerous cavities. This often appears in the lungs, and is met with in the liver and other parts.

Its symptoms are, a sallow complexion, great debility, and dropsical swelling of the limbs before the termination.

Treatment.— When it appears externally, Dr. Fell's treatment is worth a trial. When in the lungs, the inhalation of tincture of blood-root and solution of chloride of soda (241) should be used. Two teaspoonfuls may be put in Warren's Vapor Inhaler,— the instrument being filled half full of hot water,— and inhaled ten minutes, three times a day; the blood-root pills (143) being taken at the same time.

Fatty Tumor.—*Adipous Sarcoma.*

This is the most common of all the forms of tumor. These bodies generally have a soft and doughy feel, or as if filled with wool. They are the least inclined to become malignant, and consequently the least dangerous, of all the tumors. Whatever pain there is, is caused by their size, weight, and pressure. They are occasionally found a little below the point of the shoulder, in the deltoid muscle of females, and are caused by the unreasonable pressure of the dress at that point.

Treatment.— They should be removed by an operation, which is easily performed, as they separate very readily from surrounding parts.

Polypus.

The *polypi* constitute a class of tumors growing from mucous membranes. They are of two kinds, — the *soft, jelly-like* polypus, and the *fleshy* or *fibrous* polypus.

The Soft Polypus, which grows from the nose, has not much feeling, and is not particularly disposed to bleed.

The Fleshy Polypus is firmer and harder than the preceding, and most generally connects itself with the womb.

Treatment.— Both kinds of polypi are either twisted off with a pair of forceps, or strangled by putting a string, called a ligature, around their neck, which will cause them to fall off in a short time.

Wens.—*Encysted Tumors.*

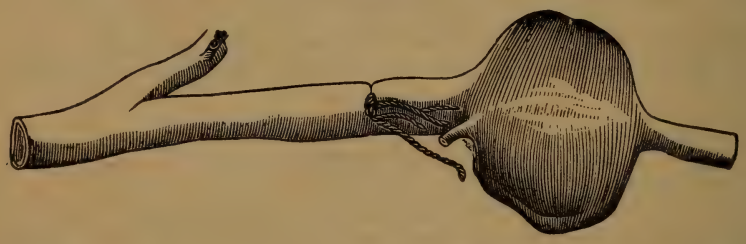
The most common situation of these is under the skin of the head. A wen is simply a sac full of various matters, which, when examined with a microscope, are found to be oil globules, epithelial cells, and crystals of stearine. These contents are secreted by the internal surface of the sac. They sometimes look like curd or rice, sometimes like suet, and sometimes like honey. In other instances, they are mere water, and they have been known to consist of hair or horn. These tumors are round, elastic, and movable, and are without pain. They grow slowly, but steadily.

Treatment.— The attempt to excite inflammation and consequently absorption, by punctures, seatons, or injections, are dangerous, and ought not to be resorted to. If the tumor is small, its opening, indicated by a small black spot, may be found, a probe be introduced into it, and the contents of the sac be squeezed out; and this may be repeated as often as necessary. But the proper and only real remedy for these tumors is their removal by a surgical operation.

Aneurisms.

An aneurism is a tumor formed by arterial blood, and communicating with an artery. A *true aneurism* is formed by the coats of an artery getting weakened by some cause, and swelling out so as to form a pouch or sac. (Fig. 171.) There are other kinds of aneurisms, which need not be described.

Fig. 171.



Symptoms. — An aneurism may be felt as a tumor somewhere along the course of an artery, and it beats under the finger like the pulse. The beating is caused by a fresh quantity of blood being pushed into this sac with every stroke of the heart. If it be small, pressure on the artery above it will so far shut off the blood from it, that it will feel flaccid or soft. The patient will often say that the tumor began to appear after some violent strain, when something appeared to give way. In the chest, aneurism will produce an unnatural pulsation felt by the patient. In the belly, it may generally be felt as a tumor through the abdominal walls.

Distinction. — Tumors which lie directly over arteries are lifted up every time the blood is driven along under them, and hence they pulsate like aneurisms; but they *do not pulsate when small*, whereas aneurisms do from the beginning of their growth. Aneurisms are *soft at first, and hard afterwards;* whereas tumors are generally hard at first, and finally soft.

Treatment. — In some few fortunate cases, aneurisms get well spontaneously. If the flow of blood through them can be stopped, that which is within them will coagulate, forming a hard tumor, which will gradually waste away. To cure them, therefore, we must stop the circulation through them; and this may be done, in some cases, by compression. The pressure upon the artery must of course be above the tumor, and should not be so great as to stop the blood altogether, but only very materially to *diminish* its flow. The pressure is applied by an instrument having two pads, an arc of steel, a joint in the middle, and a screw by which the padded extremities are pressed together. (Fig. 172.)

When this mode of treatment is not practicable, the artery must be tied between the aneurism and the heart. The patient should be placed in bed, with the limb wrapped up to preserve its temperature,

and placed in an easy position. Nothing cold should be applied to it.

The force of the circulation should be reduced by the tincture of veratrum.

FIG. 172.

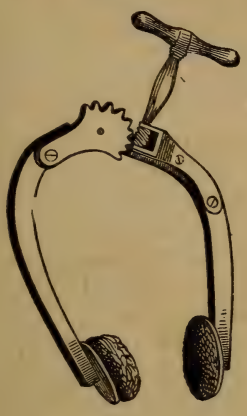


FIG. 173.

Bronchocele.—Derbyshire Neck.—*Goitre.*

BRONCHOCELE is what is called an *endemic* disease; which means, *a disease which prevails in certain localities.* This complaint is prevalent in Nottingham and Derbyshire, England, among the Alps, and especially in the Tyrol and valley of the Rhone. It is thought to be produced by the use of melted snow, and water impregnated with lime and earthy matter.

Symptoms. — A prominent, soft, elastic tumor, occupying the front of the throat, in the situation of the thyroid gland, and like it in shape. It is not tender, and the skin is not discolored. In old cases, the tumor becomes hard. In Fig. 173, the tumor is so large as to have pushed the gullet to one side.

Treatment. — The usual and perhaps the best remedy for this disease is iodine. It may be given as iodide of potassium, with a bitter or some other article (138) (145) (101). An iodine ointment may be applied to the tumor (185).

The patient should move away from the infected district, and reside, if possible, upon the sea coast.

Water in the Scrotum.—*Hydrocele.*

As the name shows, this is a collection of water in the scrotum or bag which holds the testicles.

Symptoms. — It presents a swelling, shaped like a pear, smooth on

its surface, fluctuating if pressed, without pain, but causing a little uneasiness by its weight. On placing a lighted candle on one side of the scrotum, the light may be seen through it.

Distinction. — This complaint may be distinguished from a solid enlargement of the testicle by its not being so heavy, solid, or painful, and by its fluctuating and being transparent; from rupture, by its forming slowly instead of suddenly, by the swelling beginning at the lower part of the scrotum instead of the upper, and by the enlargement not being increased by coughing as it is in rupture.

Treatment. — In children, strong scattering washes (353) are sometimes successful. But most commonly, a number of punctures are made with a large needle, to cause the fluid to escape into the cell tissue of the scrotum, whence it is removed by absorption.

To effect a radical cure in grown persons, the surgeon is to grasp the tumor behind, and introduce a trocar and canula into the sac, — being careful to point the instrument upwards, so as not to wound the testicle. The trocar is then withdrawn, — the canula being at the same time pushed well into the sac, so that none of the fluid may get into the cell tissue outside the sac. The fluid runs off through the canula. When this has all escaped, some stimulating fluid, as common lime-water, or, still better, tincture of iodine, is to be injected through the canula into the emptied sac. After retaining this from two to five minutes, it is permitted to flow out. Inflammation follows, which breaks up the secretion of water, and effects a cure in two or three weeks. The amount of fluid thrown in, should be about one or two teaspoonfuls of a mixture of one part of tincture of iodine and two parts of water. If the first operation does not effect a complete cure, it may be repeated.

Blood in the Scrotum. — *Hæmatocele.*

This is a collection of blood in the scrotum from some injury.

Treatment. — If the quantity of blood effused be small, cold applications may cause it to be absorbed. If it be large, make a puncture, and apply a poultice for the blood to ooze into.

Acute Inflammation of Veins. — *Phlebitis.*

The veins are subject to attacks of acute inflammation, which constitutes a very dangerous, and often fatal, disease.

Symptoms. — Fits of shivering, or perhaps fainting, a rapid pulse, anxiety of countenance, lowness of spirits, catching pains about the heart, and *swelling, redness, tenderness, and hardness along the course of the affected veins.* Sometimes the tongue is furred brown or black, the skin is sallow, there is bilious vomiting, low delirium, and death. In cases less rapid, there are great swelling and redness over the dis-

eased veins, and abscesses form, which, when opened, reveal clots of blood, mixed with pus. Or, the patient, while remaining low, with a sallow countenance, and a yellow tongue, will complain suddenly of intense pain in some joint, as the knee or shoulder, — in which there will be a rapid formation of pus; a similar suppuration will follow in other joints as well as in the lungs, etc., until the patient sinks, and dies of exhaustion.

Treatment. — Apply leeches freely over the inflamed veins, — also fomentations. Every abscess should be opened early. Keep the bowels moderately open with some preparation of salts, and allay pain and restlessness by morphia. Support the strength by beef tea, etc.; and, if the pulse be feeble, give wine or quinine.

The suppuration may be checked, in this as in other complaints, by drinking freely of chamomile tea. The power to control suppuraton has recently been discovered as belonging to chamomile flowers.

Chronic Phlebitis.

This is a far less serious disease than the preceding. It generally affects the veins of the legs.

Symptoms. — Tenderness and hardness of the affected vein, with swelling around it, and of the parts below; a general painfulness of the limb. After the inflammation has subsided, the vein feels hard, like a cord, because the inflammation causes the blood within to coagulate, and harden, so that nothing can pass through the vessel.

Treatment. — Leeches, fomentations, or cold lotions, as the patient may choose, purgatives, and rest, with the limb elevated. Subsequently, when the inflammation seems completely subdued, friction with camphorated oil, and bandages.

Enlarged or Varicose Veins. — *Varix.*

The veins which lie near the surface, especially those of the legs, are apt, by exhausting labor upon the feet, and by strains, to get weakened, so that their valves lose their tone, and their sides stretch and give way in certain places, letting the blood bulge out, and form purple bunches. These bags of blood, lying along upon the surface of the limb, form knotty tumors, looking like blood-boils. They occasion a kind of distress, but no sharp pain.

Persons of weak, soft, and relaxed muscles and blood vessels are particularly liable to this complaint. It often attacks women in the family way.

Treatment. — Where only a few veins are affected, it may be sufficient, in some cases, to apply firmly over them a few strips of leather, spread with soap plaster. But generally it is better to support the whole limb with a good calico bandage, or with a laced stock-

ing, which should be applied in the morning before the patient is up. It is generally well, also, to use friction, with some liniment, or iodine ointment. Lead water, or alum water, or an infusion of white oak bark, may be used with advantage. Burdock and plantain leaves, bound upon the skin, and removed before they are dry, are useful. Showering with cold water strengthens the veins.

Rupture.—*Hernia.*

Hernia signifies a protrusion of any internal organ from the cavity where it belongs; but the term is generally restricted so as to mean no more than *a protrusion of the bowel through the walls of the belly.*

When the abdominal walls are weak, from any cause, no matter what,—lifting, straining, or making violent muscular exertion of any kind, will then often cause the bowel to force itself through at the most debilitated spot; and pushing the lining of the belly, the peritoneum, along before it, a bag or sac is formed, in which the projecting bowel is enclosed, forming an external tumor.

Divisions of Hernia.—Rupture may occur in several different places, and has accordingly received different names.

Umbilical Hernia is a protrusion of the bowel at the umbilicus or navel. This is most common in children soon after birth; and women who are often pregnant are liable to it.

Ventral Hernia is that which occurs at any part of the belly where other forms of rupture do not appear.

Inguinal Hernia is that in which the bowel protrudes at the groins, or through the abdominal rings.

Scrotal Hernia is that in which the bowel descends into the bag or scrotum.

Femoral Hernia is the dropping down of the bowel behind what is called Poupart's ligament, and appearing as a tumor at the upper part of the thigh.

Reducible Hernia.—Rupture is said to be *reducible*, when the bowel may be put back into the cavity from which it came.

Irreducible Hernia.—Hernia is called *irreducible* when the protruding bowel cannot be returned into the belly.

Strangulated Hernia is that form of the complaint in which the bowel is so pressed upon at the point where it passes through the walls of the belly that it is *strangled* or *constricted* so that its contents cannot pass through.

Symptoms of Hernia.—A soft tumor, which may be compressed, appears somewhere about the belly; and is increased in size when the patient stands up. It also swells when he coughs, or makes any exertion; and grows smaller, or entirely disappears, when he lies down.

Treatment. — In a case of *reducible* hernia, the first thing to be done is to put the bowel back in its place, which is accomplished by gently pressing and kneading the tumor, and swaying it back and forth, — being careful to use no violence, — until it can be pushed within the abdominal walls. It is then to be kept in its place by the use of a truss, made expressly to fit the case. This instrument should be constantly worn by day, and by night, too, if not too irksome; but if worn by day only, it should always be applied before rising in the morning.

Irreducible Hernia may be *palliated* by wearing a truss with a *hollow pad*, which will so evenly and firmly embrace the tumor as neither to irritate it, nor permit any further protrusion or enlargement.

Strangulated Hernia. — If a person have worn a truss for some time, and, suddenly leaving it off, makes some violent exertion, either the bowel or omentum is liable to be suddenly forced through a narrow aperture, and to become *strangled.* In such case, the patient has flatulence, colicky pains, a sense of tightness across the belly, and a desire to go to stool, but no ability to pass anything. Then follows vomiting, first the contents of the stomach, then mucous and bile, and, lastly, the fecal matters from the bowels, which are not permitted to pass on to their natural outlet. The neck of the hernial sac now becomes swelled, tender, and painful, the countenance is anxious, and the pulse small, hard, and wiry; and, after a time, the tumor begins to mortify, the patient expresses himself free from all pain, and soon after dies.

In the treatment, the bowel is to be returned if possible. To do this, the bladder should first be emptied with a catheter, and the patient should lie down with his shoulders raised, and both his thighs bent towards the belly, and placed close to each other, so as to relax all the ligaments and muscles of the belly. The surgeon may now work gently for half an hour, if necessary, trying to put the bowel back, but must be very careful not to excite inflammation by any violence.

If he does not succeed, efforts are next to be made still further to relax the muscles, as well as to reduce the force of the heart's action, and to diminish the size of the tumor. With the tincture or fluid extract of veratrum viride, the heart's action and force of the circulation may be reduced to any desirable extent. The muscles may be relaxed by injections of tobacco, made by steeping one dram of tobacco in one pint of water for ten minutes. This, however, is a somewhat dangerous remedy, and should give place to the compound *lobelia* injection. Two grains of tartrate of antimony in one pint of tepid water, make a suitable injection.

To reduce the tumor, apply pounded ice in a bag, or a freezing mixture (354). If the pain be acute, give large doses of opium or morphia.

If all these remedies fail, there is then no hope but in relieving the stricture by a surgical operation.

General Directions. — Rupture is an exceedingly common affection,

Perhaps every third or fourth person suffers from it more or less. Females, from motives of delicacy, are apt to conceal the misfortune, and not seek advice. This exposes them to danger. Queen Caroline, wife of George II., lost her life by such concealment.

A swelling coming on suddenly in the groin or at the navel, after considerable exertion, may be taken to be a rupture without much fear of mistake.

The complaint being discovered, the bowel should be put back in its place, and a truss be put on at once. In the case of young persons, a truss may frequently effect a cure, but, that it may do this, it should not be taken off, night or day, except to cleanse it, and then only when the wearer is in bed.

Those who can afford it, should have two trusses of the same size and strength, so that if one get out of order, the other may take its place while it is being repaired; for, an hour's absence of the truss might occasion a mischief which it would require months to repair.

Persons having a rupture must be very careful to keep costiveness at a distance; for straining at stool is highly injurious.

Varicocele.—Cirsocele.

This is an enlargement or varicose state of the spermatic veins, and may be mistaken for hernia, inasmuch as standing and coughing increase it. But it feels like a bag of worms; and by this peculiarity, may be distinguished from rupture.

Treatment. — Wear a suspensary bandage.

Deformities and Irritations of the Spine.

Lateral Curvature. — There are several varieties of curvature of the spine. Some of them are caused by the destruction of some portion of the spinal column by disease. It will not be necessary for me to treat of these forms of curvature, as they can only be investigated and treated by the most skilful surgeons. Those who will use this book chiefly, would hardly think of meddling with them.

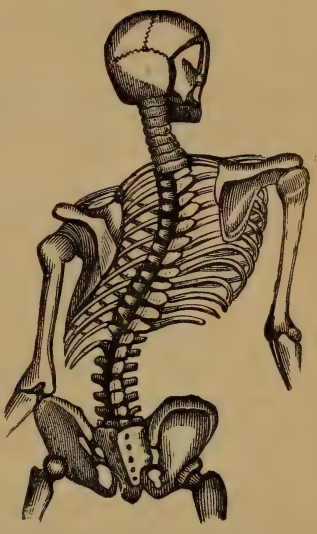
The curvature which arises from debility of the bones, ligaments, and muscles, and which is very common among females, has the following

Symptoms. — At first there is a projection of one collar-bone, or one side of the chest, or one shoulder is considerably elevated, and is popularly thought to be "*growing out.*" On examination, the right shoulder and the right side of the chest will be found, generally, to be rounded and lifted up, while the other is sunk down and concave. At the same time, the left hip sticks out, and the loins on the right side have an inward curve. The spinal column will have a curve, as in Fig. 174.

Causes. — This affection is caused by occupations which keep the body in a laterally distorted position, and tax one side of the body

more than the other. It is produced in children who study their lessons at school with one elbow resting on a high desk. The muscles, too, get so weakened in many females of luxurious, sedentary, and indolent habits, that they cannot hold the bony frame of the body in an upright position, and the jointed column of bones, called the spine, sags down to one side, and draws the whole skeleton of the trunk out of shape.

Fig. 174.



Treatment. — The first thing to be done is to learn what particular attitude of the body has occasioned the distortion. This discovered, every possible effort is to be made to break up the habit, whatever it may be. If it be standing on one foot, or sleeping on one side, or reading or writing with the elbow high, keep a constant watch and strict rule over the patient.

Exercise in the open air should be free, and taken daily. The use of the dumb bells is excellent for both sexes; but girls should, in addition, have all the variety of elegant exercise furnished by calisthenics. Wealthy parents, whose daughters are tenderly bred, should *never* let them grow up without the invigoration which these exercises impart.

When the curvature is marked, and the debility considerable, these vigorous exercises should be taken for a time with moderation, and the patient should lie down and rest immediately after taking them.

In many cases considerable benefit is derived from the mechanical support afforded by supporters of various kinds. These are now constructed and adapted to the body, with considerable skill, by those who make their construction a study and a business.

Spinal Irritation. — The spinal column is liable at certain points, to become congested, and consequently sore and irritable.

Symptoms. — The symptoms of this state of things are very variable and numerous, as all sorts of sensation of the skin, from utter numbness and insensibility up to the most acute sensitiveness, described as creeping, shooting, coldness, tingling, and the crawling of ants. There may be neuralgic pains, spasm, cramp, trembling, or palsy of the voluntary muscles; or a fixed pain and tenderness in some joint or other part; or palpitation of the heart, dizziness, and wind and pain in the stomach.

When any of these symptoms appear, and cannot be traced to any other cause, we are to suspect some irritability of the spinal column, and to search, accordingly, in that direction. The proper method of search is, to make firm pressure on each of the projections of the spine, and to pass over the projections a sponge wrung out of hot

water. If there be trouble here, the patient will now be likely to complain of severe pain at some one point. Or, the tender place will generally be found sooner, by tapping with the ends of the fingers, with quick and sharp strokes along upon the projecting bones of the spine. The patient will be pretty sure to wince when the tender point is reached.

Treatment. — Apply leeches, and follow them with a blister, or stimulating liniment, or some strong, slightly irritating plaster, and the tenderness will be very likely to disappear, as if by magic.

Wry Neck. — *Caput Obstipum.*

In this complaint, the head is drawn over towards one of the shoulders, with the face generally turned towards the opposite side. This is caused by the rigid contraction of a particular muscle. In some instances, however, other muscles are affected, and the head may be drawn in other directions, or be twitched about in various ways.

I had a singular case from New Hampshire, which, though not exactly wry neck, was a kindred disease, and is worthy of being mentioned. The subject of it was a young lady of good physical development, but inclined to nervous complaints. Her head was chiefly drawn over backwards, sometimes so as to lie for a short time flat upon the back, with no power to raise it. She was obliged, ordinarily, to let her head lean a little to one side, and rest upon the hand, in order to keep it steady. When walking, with the head erect, without this support, it was every few moments jerked over backward and a little to one side, the chin being thrown up in a most unseemly way. The case partook of the nature of chorea.

Treatment. — For the genuine wry neck, where the muscle which draws the head to one side is rigid and inflamed, the treatment should consist of leeches, poultices, purgatives, blisters, and alteratives. When the muscles causing the distortion are not rigid, electro-magnetism, or the shower bath may have a good effect. In some cases, strychnine will do well.

The peculiar case mentioned above, completely recovered, under the uses of the extract of St. Ignatius's bean (95), one pill three times a day, and gradually increased to nine pills a day. She also took iron, and was put upon a most energetic system of out-door exercise. Considering the stubborn and severe nature of the complaint, her complete recovery was as unexpected to her friends as it was gratifying.

Foreign Bodies in the Eye.

When a person complains of some substance in the eye, the inside of the lower eyelid, and lower portion of the ball, should first be examined, the person being directed at the same time to look up. If nothing be discovered there, the patient is then to be directed to look

downward. This will expose to view the upper part of the globe. At the same time, the eyelashes should be taken between the thumb and finger, and the lid turned upward over some round smooth thing, as a bodkin, which will turn the lid wrong side out, and bring to view whatever is on the inner surface. Any foreign body discovered may be removed by wiping it off with the head of a pin, having a silk handkerchief turned over it. If this fails to detach it, it may be carefully picked up by running under it the point of a lancet, tooth-pick, or pen-knife.

Stye. — *Hordeolum.*

A STYE is nothing more nor less than a small painful boil at the edge of the eyelid.

Treatment. — In severe cases, apply a poultice; and open it as soon as it begins to point. After it has discharged all it is likely to, apply, on going to bed, for two or three nights, a little diluted nitrate of mercury ointment. Tonics and alteratives are frequently required to break up the formation of styes.

Inflammation of the Edge of the Eyelids.

Ophthalmia Tarsi.

THIS inflammation often involves the Meibomian glands, which then secrete a sticky mucus, which, not being wiped away during sleep, glues the lids together, so that, on waking in the morning, the patient cannot get his eyes open. The complaint is generally chronic and obstinate, lasting a long time. Weakly persons, with disordered digestion, are most subject to it. In some cases the lids ulcerate, and the lashes fall out. Generally the lids are considerably inflamed for a few days, and then, the inflammation subsiding, branny scales, which may be brushed off, form along the borders of the lids, at the roots of the lashes.

Treatment. — The health being generally disordered, needs first to be improved by all possible means, as by alteratives, tonics, bathing, exercise in the open air, travelling if practicable, and a generous diet. While the lids are inflamed, they should be bathed by a wash composed of sulphate of zinc, twelve grains; laudanum, two drams; and soft water, twelve ounces. The redness and heat having subsided, and the bowels being opened by a gentle dose of physic, an astringent wash should be applied once or twice during the day (208) (209), and a small piece of the diluted nitrate of mercury ointment be rubbed along the borders of the lid, with a pencil-brush at night. This will generally effect an immediate improvement, and in time will bring about a cure.

Disorder of the Lashes.

Trichiasis. — This signifies a growing inward of the eyelashes.

Dystrichiasis. — This is a double row of eyelashes, one of which grows inward.

Treatment. — Pull out the misplaced hairs, and continue to do so as fast as they appear.

Ptosis.

This is a falling down of the upper eyelid, from palsy of the third nerve. It is sometimes attended with headache, and dizziness, and may be the forerunner of apoplexy.

Treatment. — Begin the treatment with purgatives, and then use every means to improve the health, especially exercise out of doors.

Chronic Inflammation of the Lachrymal Sac.

When the mucous lining of the nasal duct gets thickened and obstructed, the patient complains of great weakness of the eye, which is constantly *weeping*, — the nostril on the same side having a corresponding *dryness*. The tears not passing down through the obstructed duct, collect in the lachrymal sac, and form a small tumor by the side of the nose. By pressing the finger upon this, the tears may be squeezed out through the upward passage, and glairy mucus along with them. There is generally tenderness of the sac, and sometimes redness of the skin. There is commonly inflammation of the mucous membrane lining the eyelids, etc.

Treatment. — The acute inflammation of the sac must be treated by leeches, purgatives, and cold washes.

Chronic inflammation of the sac requires a special attention to the general health. The diet should be carefully regulated, and the alkaline sponge bath used every day, with brisk rubbing after it. When the sac gets very full, the patient should try gently to force the contents *down* into the nose by pressing upon the upper side of the tumor; and he may promote the same object by strongly drawing in his breath often with his mouth and nostrils both tightly shut. The diluted nitrate of mercury ointment may be applied to the eyelids at bed-time, and a little of prescription (211) may be dropped once during the day into the inner corner of the eye.

Purulent Ophthalmia. — *Egyptian Ophthalmia.*

Owing to the glaring sunshine, and the particles of sand with which the air is loaded, this disease is endemic in Egypt. Hence its name *Egyptian* opthalmia.

Symptoms. — It begins with stiffness, itching, and watering of the eyes, and a feeling as if there were dust in them. The lids are a little swelled, and become glued together during sleep. The mucous membrane which lines the lids and covers the ball, is intensely red and swollen, and discharges a copious quantity of pus. There is a severe burning pain extending to the cheek and temple, with headache and fever. The eyes cannot be opened. It is both contagious and infectious.

Treatment. — At the very beginning, apply a nitrate of silver wash (211), twice a day. With this application, a low diet, and five to ten-drop doses of fluid extract or tincture of veratrum viride, every hour, this terrible complaint may often be broken up.

If the disease have reached its height, and there is great fever and headache, the patient may be freely purged (31), and the pain be allayed by full doses of Dover's powder.

The patient must be kept in bed, in a dark room, with the head elevated.

The eyes should be frequently washed out gently with warm water, or a decoction of poppies, containing one grain of alum to an ounce. This must be done with a piece of fine sponge, or with a small syringe. Once or twice a day, a few drops of solution of nitrate of silver, two grains to the ounce of soft water, may be dropped in the eyes from a camel's-hair pencil. As soon as the disease begins to give way, the alum in the poppy decoction may be increased a little.

Purulent Ophthalmia of Children.

This always begins within a short time after birth, — generally on the third day.

Symptoms. — The edges of the lids at first become red, and glued together, and the membrane lining them is red and rough. The eye remains closed. The conjunctiva or membrane which covers the globe, next becomes intensely scarlet, and so much swelled, at times, that the lids turn out; and it discharges a thick purulent matter. The child is feverish and restless.

Causes. — Exposure to cold and damp, bad nursing, omitting to wash away from the eyes the cheesy secretions of the skin, and the contact of gonorrhœal and leucorrhœal secretions of the vagina at birth.

Treatment. — Wash out the eye frequently, and gently, with a weak astringent wash (207) (203), or put between the lids once a day, a large drop, with a camel's-hair pencil, of prescription (208). When the disease is declining, apply to the lids, with a camel's-hair pencil, diluted nitrate of mercury ointment.

Catarrhal Ophthalmia.

Symptoms. — In this complaint, *the white of the eye* becomes inflamed and very red, the redness being superficial, so that the vessel can be moved by pulling the eyelids; generally there is a thin mucous discharge, which, in severe cases, becomes thick and purulent. It is caused by cold and damp.

Treatment. — If there be considerable pain and headache, give purgatives (31) (19), and continue them, once a day, till the symptoms of active inflammation subside. Apply to the eyes a poultice of slippery elm, and bathe them frequently with a decoction of poppy leaves, lukewarm or cold, according to the choice of the patient. Smear the edges of the lids at night with fresh lard; and when the inflammation begins to decline, use diluted nitrate of mercury ointment instead. Keep the eyes well protected from the light with a shade. A large drop of a solution of nitrate of silver, two to four grains to the ounce of water, may be put into the eye two or three times a day. Sometimes sulphate of zinc, four grains to the ounce of water, will do well.

When the disease reaches the chronic stage, — the pain and headache having passed off, — some astringent applications will be required, as a very *weak* solution of nitrate of silver (208), or a dram each of powdered witchhazel leaves and golden seal, steeped for ten minutes in a gill of boiling water, and strained when cold.

Scrofulous Ophthalmia.

This disease is chiefly confined to children under eight years of age.

Symptoms. — Entire inability to bear light; the lids are spasmodically closed, and the head constantly turned away from the light. The blood vessels of the conjunctiva are not particularly injected, with the exception of one or two large ones which run towards the cornea, and terminate in one or more small opaque pimples. The cornea frequently ulcerates, and the complaint is very obstinate, — being liable often to recur.

Treatment. — As in all scrofulous complaints, it is important in this to look after the general health. No more physic is required than to keep the bowels open; and even this, if costiveness exist, had better be done by bread made from unbolted wheat flour, by injections of cool or tepid water, and by exercise. The health must be supported by iron, sarsaparilla, stillingia, and quinine.

The eye is to be strengthened by cold water applied to the lids, the forehead, and the temples. The eyes may be bathed likewise with a warm decoction of poppies, or of chamomile flowers.

But one of the best applications is a solution of nitrate of silver, one or two grains to the ounce of water, a few drops being put into

the eye once or twice a day. Occasionally a solution of sulphate of copper, of the same strength, may be used with decided advantage.

Both eyes should be protected by a shade.

Inflammation of the Cornea. — *Corneitis.*

Symptoms. — The cornea is rough, red, opaque, and generally prominent. There is some pain and inability to bear light, but not great. The pulse is frequent, and the skin dry.

Treatment. — If the inflammation be acute, use leeches, emetics, purgatives, tincture of veratrum. Apply fomentations, and smear belladonna ointment on the eyebrows.

For the chronic form, give quinine and other bitters, and put blisters upon the nape of the neck, and behind the ears. The wine of opium, and the diluted nitrate of mercury ointment, must be applied to the lids.

Inflammation of the Iris. — *Iritis.*

The iris is covered with a serous membrane, and is very liable to adhesive inflammation.

Symptoms. — In the first stage, the iris changes its color, and the pupil is contracted. In the next stage, lymph is poured out upon the surface in a thin layer, sometimes, which looks rusty, and sometimes in larger quantities, filling the whole cavity of the aqueous humor.

Causes. — Injuries, or overworking the eye, but more frequently a taint of the system from gout or syphilis.

Treatment. — If there be considerable inflammation, apply leeches to the temples, and keep down the circulation by tincture of veratrum. To relieve pain, if any, give Dover's powder, or morphia. The strength is generally to be supported by quinine; and in many instances, iodide of potassium is to be given as an alterative. A little solution of atropia, one grain to the ounce of water, is to be dropped into the eye once or twice a day, and a warm infusion of slippery elm bark, or of marshmallow, to be used as a wash. The bowels to be kept open by gentle physic.

Weakness of Sight. — *Muscæ Volitantes.*

This is an affection to which persons of weakly constitution are liable, and those who write much, or examine very small objects.

Symptoms. — Dimness of sight; uneasiness on exposure to a strong light; and specks floating before the eyes, — often looking like flies.

Treatment. — The complaint depends on debility, natural or acquired; and tonics, as quinine and iron, and the shower or sponge bath, and out-door exercise, are the proper remedies.

Imperfect Vision.—*Amaurosis.*

The complaint here referred to is dependent on some change in the optic nerve or the brain, — most commonly the former.

Symptoms. — In some cases the sight becomes suddenly dim, and is perhaps soon lost altogether; but more often it is impaired by slow degrees, — being only defective at intervals, as when the stomach is out of order, or the eyes have been fatigued. At one time, it will begin with objects appearing dim; at another, with their being double; at still another, with the ability to see only one half of objects. In some instances, the complaint begins with a crooked, or disfigured, or discolored appearance of things looked at. Again it will begin as near-sightedness, or far-sightedness; or the patient cannot measure distances, and will miss his aim in pouring water into a glass, or in putting a match to the wick of a lamp. The flame of a lamp will appear split. At times the eye does not bear light; at other times it longs for it, and objects do not appear illuminated enough.

Distinction. — Amaurosis may be distinguished from cataract by there being no opaque body to be seen behind the pupil; and by the light of a candle appearing discolored, split, or lengthened, or iridescent, whereas in cataract, vision is only clouded, and a lighted candle looks as if surrounded with a mist.

Chances of Cure. — These are generally not very favorable, unless the remedies employed very soon produce good effects.

Treatment. — Electro-galvanism is one of the most promising remedies. Bayberry root, dried and reduced to an impalpable power, and taken as a snuff, is occasionally useful. Cayenne, steeped in water, one grain to one ounce of water, and a little of it dropped into the eye, may stimulate the palsied nerve, and in some cases restore sight.

Blisters may be applied behind the ears, or a seton may be tried upon the back of the neck, with some promise of success.

But probably nothing will do better than cold bathing, — a shower bath if it can be borne, — out-door exercise vigorously pursued, and an adherence for a long time, — perhaps a year, — to a strictly vegetable diet, — at the same time using nervine tonics, etc. (316).

Short and Long Sight.

Short Sight, called *myopia*, depends on *too great a convexity* of the cornea, or crystaline lens, or vitreous humor, — one or all, — and the consequent formation of the image of the object inspected *a little in front of the optic nerve, or retina,* — as at *a*, Fig. 173, instead of at *b*, where it should be formed. The rays of light are brought to a focus before they reach the retina.

Children are either born with this defect, or it is brought on by too close study, or by long application of the eyes to minute objects.

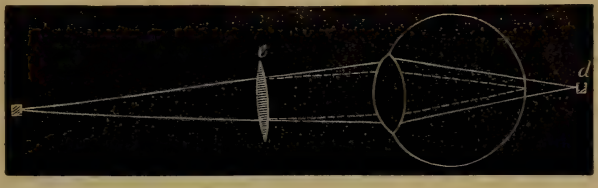
It may be remedied frequently by exercising the eyes in looking at distant objects. Children afflicted in this way should have their studies abridged, and their exercise in the open air increased. While studying they should have some apparatus applied to them which shall keep the chin elevated, so that the head cannot be dropped too low, and the eyes brought too near the book. And the book should each day be placed a very little further from the eyes.

Fig. 173.

Glasses worn by persons having this defect of vision should be concave, as at *c*.

Long Sight, or *presbyopia*, depends on the humors of the eye *not being convex enough*. In this case, the image of the inspected object is formed *beyond the optic nerve*, as at *d*, Fig. 174. This is one of the earliest signs of advancing age.

Fig. 174.



This defect is to be remedied by glasses which are *convex*, *e*. Persons in the early autumn of life, must not resort to glasses too hastily, or, indeed, until they are compelled to, nor should they change those first used too soon. Glasses should make objects look distinct and bright, but not larger than natural.

Squinting.—*Strabismus.*

In strabismus, the eyes are not parallel in their position and motion.

It is supposed that one eye may become weaker than the other, or that the visual axis of the two may not be adjusted alike, so that one eye,—perhaps the more defective one,—turns aside to escape the distorted vision, or possibly the injury to itself which would follow the attempt to make eyes of unequal power work evenly together. The opposing muscles lose their counterbalancing force, and the internal rectus, gaining the preponderance, draws the eye *inward*,—for the squint is more often *convergent* than *divergent;* that is, the eye turns *in* more often than *out*. Both eyes sometimes squint.

Treatment. — In recent cases, there is some chance of curing this complaint without a surgical operation. The patient should not be in the society of other squinting persons, so as to learn it by imitation.

In the first place care should be taken that the bowels are kept in good condition, and that the general health is well fortified by bathing, tonics, and exercise. The patient should be made to stand before a glass, and while he closes the sound eye, look steadily at some object with the squinting eye. Let him do this till the eye is a little tired; then let him open the sound eye, when the squinting one will turn aside. But by compelling it, in this way, several times a day, to work in a straight line, it may, perhaps, be taught to remain parallel with the other.

Nervine tonics, as strychnine (86) (94) (95) (316), will sometimes do good service; and electro-galvanism has been found useful in many cases.

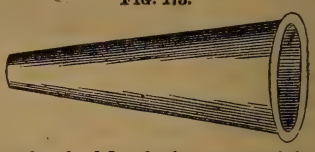
But in old and obstinate cases, the only cure is found in dividing the muscle which pulls the eye to one side, — the internal rectus, if the eye is drawn in, — the external rectus, if it is drawn out.

Affections of the Ear.

These are so common, that, in almost every family, they require attention, at one time or another. And deafness, which so often results from these disorders, is so serious a misfortune, that every affection of the ear should receive early attention.

Examination of the Meatus. — For examining the meatus, or external passage of the ear, there is perhaps no better instrument than a simple silver or glass tube, of the size and shape represented in Fig. 175.

Fig. 175.



To make the examination properly, place the patient either in a sitting, kneeling, or standing posture, as may be most convenient, with the ear directly under a good stream of gas, or lamp, or sun-light. Then take hold of the ear with the thumb and finger, and gently draw it outward and backward, and with the other hand introduce the small end of the tube or speculum, and carry it forward as far as it will go without producing pain. Then by gently swaying the large end of the tube back and forth, a stream of light may be made to illuminate all sides of the passage. If the lining of this passage is smooth, dry, pearly-white, and shining, and is without wax, it may be regarded as healthy. At the close of the passage, the tympanum may be seen, and should be semi-transparent, dry, and grayish-white. Within this, may be seen the handle of the malleus, coming from above downward and forward. This bone runs about half way across the tympanum, and divides it into an upper front, and a lower back part. This lower back portion, when viewed through the speculum, is more glistening than the upper and front part, and a bright spot of light is seen on its most rounded portion, which is just below and behind the point of the malleus.

Inflammation causes this innermost part of the meatus to become thickened, vascular, or granular, — like the conjunctiva of the eye when it is inflamed; it also causes it to secrete and discharge matter.

Inflammation of the Meatus.—*Otorrhœa.*

This is quite a common complaint among delicate children; and may occur as the result of scarlet fever, or be excited by currents of cold air, by rotten teeth, or by deranged stomach and bowels.

Symptoms.— Fever, headache, intense pain in the ear, and swelling of the glands of the neck. After a time, a reddish, watery discharge comes on, which soon grows thicker and mattery. The fever disappears with the appearance of the thick matter. An examination with the speculum shows the whole meatus to be swollen, vascular, and covered with a slimy matter.

Unless great attention be given to cleanliness, the discharge becomes very abundant and fetid, and lasts for a long time; and if neglected, will be likely to lead to very serious consequences, even the decay of some of the bones of the head.

Treatment.— While the inflammation is acute, and there is fever and pain, the diet should be confined to mere liquids, — as rice-water, gruel, etc., and the bowels should be opened with some preparation of salts, — the ear being gently syringed, occasionally, with warm water, or decoction of poppies, and being covered with a warm poultice of flax-seed, or bread and milk. In place of a poultice, a soft linen bag, filled with bran, and dipped in hot water, may be kept on the ear. If there be great pain and headache, put leeches behind the ear.

The pain and fever being gone, and the *mattery* discharge having come on, the case is to be treated like other *chronic* diseases of mucous membranes in scrofulous constitutions, by tonics, alteratives, warm baths, and out-door exercise.

The ear may now be gently syringed out with castile soap and water, and immediately after with a weak solution of alum, or sulphate of zinc, one grain to a dram. This may be done twice a day. Or, a little of a mixture of two drams of solution of sugar of lead and half a pint of water, may be dropped into the meatus, and, after remaining two or three minutes, be allowed to run out. If the discharge be very fetid, two drams of solution of chloride of lime, with half a pint of water, will make a suitable wash with which to syringe it, — applying, once a day, a solution of nitrate of silver, five grains to the ounce of water.

Should the discharge stop at any time, and pain and fever come on, lay aside these astringent applications, and go back at once to the leeches, purgatives, poultices, and fomentation.

Wax in the Ear.

The ear sometimes becomes completely filled with wax, mixed with hairs and flakes of scarf-skin.

Treatment. — Let the ear be gently syringed from time to time with warm soap suds, so as thoroughly to clear out the whole mass of matter. The water may be quite warm, and a little cotton should be loosely inserted after the syringing.

Earache. — *Otalgia.*

Symptoms. — This is simply *neuralgia* of the ear, and comes on in fits of excruciating pain, which shoots over the head and face. It may be distinguished from inflammation of the ear, by the suddenness and intensity of the pain; by its not throbbing, not increasing in intensity, not being attended by fever, and not coming and going without apparent cause.

Treatment. — Fill or remove all rotten teeth, which may be suspected as the cause of the suffering. Give iron, particularly the citrate combined with strychnine (316).

Inflammation of the Tympanum. — Deafness. — *Otitis.*

Symptoms. — In the acute form of the disease, there is violent pain, ringing noises in the ear, and delirium. When the suppuration takes place, there is a chill, and a heavy, tensive pain.

In the chronic form of the complaint, the lining membrane of the tympanic cavity, has its vessels a little enlarged, with blood sometimes effused into its substance, or lymph upon its surface, or the membrane is thickened, and sometimes covered with tuberculous concretions, or there are fibrous bands occupying nearly the whole of the cavity.

Symptoms. — These are slight, — the first perceptible change being, generally, *deafness* in one or both ears. There may be a woolly sensation, with noises or ringing, and slight aching pains.

Treatment. — As the deafness in these cases generally depends on a *chronic* inflammation of the tympanic membrane, the best remedies are those which improve the condition of the digestive organs and general health, as regular diet, bathing, pure air, and exercise, with tonics and alteratives. Occasionally, a leech or two, or a blister behind the ear, will be serviceable. But generally dry cupping behind and in front of the ear will answer the purpose for calling the blood away from the thickened membrane.

If the inflammation be acute, it must be combatted with purging, blisters, poultices, and fomentations.

When deafness is caused by inflammation in the eustachian tubes, or from enlargement of the tonsils, etc., the tonsils must be cut off, and a solution of nitrate of silver, twenty grains to the ounce, must be thrown upon the mouths of the tubes with a shower syringe.

Bleeding from the Nose.—*Epistaxis.*

Treatment. — In full-blooded persons, with redness of face, and subject to headache, and dizziness, bleeding from the nose may be salutary, and necessary to ward off apoplexy, and should not be too suddenly stopped.

When the bleeding is such as to require to have it arrested, plug the nostrils with the scraping from a fur hat, or with lint, dipped in a strong solution of alum, or tannin, or Monsel's persalt of iron, one part to ten parts of water.

Ingrowing Toe-Nail.

To most persons, the above words will suggest some unpleasant associations, for there are few but have had some painful experience with this affection. It is generally, like corns and some other troublesome things, the penalty inflicted for wearing tight shoes. It generally appears upon the great toe. The constant pressure of a narrow boot or shoe against the side of the toe, causes the edge of the nail to sink into the flesh, and cause inflammation and pain, and finally ulceration. Nature, attempting to repair the mischief, sends out granulations, which, being perpetually irritated, shoot up into unhealthy growths, called *proud flesh.* Thenceforward, the sufferings of the patient become incessant; and he cannot now even compromise, as he would be glad to do, by putting on shoes of ample dimensions, but is obliged to negotiate a peace by putting away the shoe altogether, or by cutting a hole through it to take off the pressure. At the risk of giving the reader a few dismal twinges every time he looks upon this page, we place here, in Fig. 176, a good representation of this tormenting disorder, as a suitable warning against the folly of giving the toes narrow quarters.

Fig. 176.

Treatment. — Make a lye by putting half a pint of hard-wood ashes into a quart of hot water; bathe the toe in this, while warm, twenty minutes, every day. Immediately after each bathing apply a poultice, made of ground slippery elm and weak lye, changing the poultice twice a day. As fast as the inflammation is subdued by this, press a little fine lint gently under the edge of the nail. At each subsequent dressing, cut off as much of the nail as is raised out of the tender flesh, with the keen point of a penknife. Continue to do this till the whole offending portion is cut away.

If the above treatment does not reduce the inflammation and great

tenderness, spread some extract of belladonna upon lint, — lay this upon the diseased part, and put a poultice over it.

When the disorder begins to make its appearance, it is a good plan to scrape the nail very thin on top; this will cause it to grow upon the upper surface, and to give way at the tender part, so as to obviate, sometimes, the necessity of any other treatment.

The following is the best treatment. Wash the toe in warm water, and make the parts dry with cotton wool. Then gently press cotton wool in between the toe nail and the tender projecting flesh, and extend it along the groove back between the skin and nail. Next, wet the end of a piece of nitrate of silver, and rub it thoroughly upon the nail, close to the cotton, not allowing it to touch the tender flesh; then put on a thin layer of cotton wool, and, in two or three hours, a poultice around the toe.

In two days, the nail will be perfectly black, and, as far as the nitrate was well applied, will be separated from the parts underneath, and may be taken off without pain.

If the nail is *very thick*, scrape off the black and deadened part in two days, and apply the nitrate again. This treatment is a vast improvement on the old and cruel practice of tearing off the live nail.

Chafing and Excoriation.

When the neck, arm-pits, thighs, etc., of children, get chafed or excoriated, a remedy may be found by keeping the parts clean, and by dusting them with powdered slippery elm, starch, or hair-powder. If this does not effect a cure, apply Turner's cerate, or wash the parts with a solution of sulphate of zinc, or nitrate of silver, five grains to the ounce of soft water.

Grown persons may treat these troubles very much in the same way, or by wearing cotton between parts which rub together.

Foreign Substances in the Nose.

When any foreign substance gets lodged in the nose, close the mouth and the opposite nostril, and then blow forcibly through the obstructed side. If this is not successful, press the thumb against the nose *above* the obstructing body, and then make a hook of a piece of wire or knitting needle, and pressing it up over the offending substance, pull it down.

Foreign Substances in the Ear.

If flies and other insects get into the ear, fill the ear with sweet oil, and then syringe it out with warm water. Sometimes it will be sufficient to hold the head down on one side, and have the ear filled with water, — remaining quiet in this position for a short time, when the insect will rise to the surface. If any hard substance be got into the ear, lie down quietly upon the affected side, and send for a physician.

Foreign Substances in the Gullet.

If the substance have not gone beyond the reach of the thumb and finger, thrust them down as far as possible, and try to pull it out; or, a small curved pair of forceps will reach still lower than the fingers. Or, this failing, let some one place one hand firmly on the chest of the choking person, and give him a smart blow or two between the shoulders with the other hand. If the substance be down some way in the gullet, it may be pushed along into the stomach by some smooth, blunt instrument.

Foreign Bodies in the Windpipe.

Sometimes foreign bodies will remain a long time in the windpipe, and will only create some inflammation and cough, but not any immediately dangerous symptoms. When the body has gone entirely below the epiglottis, but little can be done, except to give a pinch of snuff to cause sneezing, and to direct the patient to expel the air explosively from the lungs by a few energetic and sudden coughs. This may drive the offending body out.

Bleeding from Wounds.

If bleeding occur from any part where a bone lies near the surface, as the head or face, it may generally be stopped by pressing firmly against the bone with a finger, or a piece of cork, or by binding on tightly a hard pad. If this does not succeed, lift up each edge of the wound, and examine carefully to see if any small stream of blood is *spouting out in jets*. If so, an artery is wounded, and the point of small forceps or tweezers must be dipped in where the jets come from; the spouting mouth taken hold of and drawn out; and a strong silk thread passed around it, and tied below the forceps. The white and gaping mouth of the vessel may then be seen.

If the bleeding be profuse from an arm, the whole current of blood to that limb must be cut off, which may be done by some person pressing a thumb firmly into the neck behind the middle of the collar-bone. This will dam up the blood in the great artery of the arm, as it comes out of the chest. The handle of a door-key, wrapped in several folds of linen, may be pressed upon this place for a long time until medical assistance can be had.

Dangerous bleeding from the thigh or leg, may often be stopped by pressing the great artery just below the crease of the groin.

If the bleeding be below the middle of the upper arm, or middle of the thigh, pass a handkerchief once or twice around the limb, as far above the wound as possible, and tie it tightly. Slip a stiff stick under this, and turn it round, like the handle of an auger, until the handkerchief becomes so tight as to stop the bleeding. This arrangement is called a stick-tourniquet, and is intended to answer the same purpose with the instrument represented by Fig. 146. (See p. 878.)

Apparent Death from Noxious Vapors.

When persons become insensible from breathing foul air in a deep well or other place where it collects, let them be immediately exposed to the open air, and cold water be sprinkled upon the face and head, and strong vinegar be rubbed about the nostrils. As soon as there is ability to swallow, give some drinks, as lemonade, or a few drops of aromatic sulphuric acid, dropped into a tumblerful of water, and slightly sweetened. A stimulating injection (246) may be given.

Apparent Death from Burning Charcoal.

Some persons very thoughtlessly attempt to warm their sleeping or sitting rooms with a portable furnace, or open pan filled with burning charcoal, or live coals from a wood fire. This is very wrong, as such coals while burning throw off large quantities of carbonic acid gas, a deadly poison. This being heavier than atmospheric air, falls to the bottom of the room, and for a time may do no damage; but, if there be no chimney-draught, or open door or window, it will rise above the heads of those in the room, and bring on asphyxia and death.

Let such cases be treated the same as the preceding, with the additional measure of attempting to excite breathing, as in the case of persons apparently dead from drowning.

To Recover Persons Apparently Drowned.

Drowning persons die by what is called *asphyxia.* The air being shut off from the lungs, breathing stops, and the immediate accumulation of carbonic acid in the blood, paralyzes the nervous system, and insensibility immediately follows. The heart continues to beat, however, from five to twenty minutes after the occurrence of insensibility and apparent death.

Recovery *may* take place at any time before the heart ceases to beat, and has been brought about in some cases even after this organ has become still. It has taken place, in some few instances, as late as half an hour after being under water, but it can scarcely be expected, even under the best treatment, later than twenty minutes from the time of submersion; and even as late as this, the chances are much against restoration.

Treatment. — The best treatment is that recommended by Dr. Marshall Hall.

Treat the patient instantly, on the spot, in the open air, and, except in severe weather, expose the face and chest to the breeze.

Then, to Clear the Throat, place the patient gently on the face, with one wrist under the forehead. All the fluids, and the tongue now fall forward, leaving the passage to the windpipe free. If there be breathing, wait and watch. If there be no breathing, or, if there have been, and it has failed,

Then, to Excite Breathing, turn the patient well and instantly on his side, and excite the nostrils with snuff, or the throat with a feather, and dash cold water on the face, previously rubbed warm. If there be no success, lose not a moment, but, instantly,

Next, to Imitate Breathing, replace the patient on his face, raising and supporting the chest well on a folded coat or other article of dress. Now very gently turn the body on the side, and a little beyond, and then quickly back upon the face, and repeat these turnings, back and forth, deliberately, efficiently, and perseveringly, fifteen times in a minute, occasionally varying the side. These motions will cause a kind of artificial breathing; for while the patient rests upon the breast, the weight of the body compresses this cavity, and expels the air, which is the same as the outgoing breath, or expiration; when he is turned on the side, the pressure is removed, and the air rushes in as in natural inspiration, or the ingoing of the breath. When the patient is on the face, make even and efficient pressure along up the back of the chest, discontinuing it immediately before turning the body upon the side. This upward gliding pressure helps expel the air. Of course it must be stopped the moment the body is in a position upon the side to let it in. The result of these movements is *breathing*, and, if not too late, *life*.

Then, to Induce Circulation and Warmth, rub the limbs upwards (and of course this should be done during the previous measures) with firm grasping pressure, and with energy, using handkerchiefs, and warm soft flannels if at hand. This pushes the blood along up towards the heart through the veins. In this way, too, the limbs are warmed and dried, and may be now clothed, — the bystanders supplying the garments. Avoid the continuous warm bath, and the position on or inclined to the back. Beside the above, pour into the nostrils a teaspoonful of aromatic spirit of ammonia, and thrust a feather into the nostrils, dipped in water of ammonia. Give also a *stimulating* injection, composed of a pint of water with a tablespoonful of ground mustard, and a teaspoonful of pulverized cayenne, and put a mustard poultice upon the perineum and anus.

Apparent Death from Lightning.

A stroke of lightning will frequently produce asphyxia by paralyzing the muscles of respiration. In such case, the same means for recovery should be used as in apparent death from drowning. Or, the apparently dead person may be placed in a current of fresh air, and cold water dashed upon the face, neck, and breast, and warm friction be applied if the body is cold.

Apparent Death from Hanging.

Persons found hanging, who have committed suicide, are to be cut down instantly, and the same means employed to reëstablish breath-

ing as in cases of drowning. It may help to restore the breathing, to bathe the forehead and face with vinegar, or t. cture of camphor, and to pass hartshorn frequently under the nostrils.

Clothes Catching Fire.

It is perhaps unreasonable to look for presence of mind when this frightful accident occurs, yet it is never more needed than at such a time.

The instant a lady perceives her clothes to be on fire, and *in a blaze*, she should seize the nearest large rug, cloak, blanket, coverlet, or any equivalent article, and, wrapping it *tight* around her, throw herself flat upon the floor, taking care to keep the protecting covering *close* to her until the fire is completely smothered. If she does this with energy, and effectually, she will put out the fire instantly.

If she continue on her feet, the blaze will rapidly ascend, and burn her vital parts. If she *run* to seek relief from others not present, the motion of the air will fan the flame into a swifter work of destruction.

If it be a child that is on fire, let any person present treat it as above. If it be badly burned before the fire is extinguished, put it instantly into a tub of cold water, or dash cold water upon it, to prevent the burn from becoming deep.

Accidents on the Water.

If upset in a boat, or otherwise thrown into the water, and are not able to swim, draw the breath in well, and keep the mouth shut tight. Do not struggle and throw the arms up; but yield quietly to the water, hold the head well up, and stretch out the hands only *below* the water. To throw the hands or the feet *up*, will pitch the head *down*, and cause the whole person to go immediately under water. Keep the *head above*, and everything else *under* water.

Poisoning Accidents.—Antidotes of Poisons.

Accidents from poisons are of such common occurrence, that every person should know the proper remedies, and not be obliged to wait the arrival of a physician before the proper corrective is applied. The most common remedies, with the methods of applying them, will be given under the proper heads below. The *mineral* poisons will be spoken of first. (See p. 880.)

Poisoning by Ammonia.

Water of ammonia, or hartshorn, if taken in an undiluted state, acts as a violent poison.

When this accident happens, give *vinegar* instantly, mixed with a little water. Vinegar is an *acid*, and ammonia is an alkali; and acids and alkalies neutralize each other.

Poisoning by Antimony.

Tartar emetic, and wine of antimony, are sometimes taken by accident in large doses, so as to act as poisons, and cause dangerous vomiting and prostration.

Give a tea of slippery elm, flax-seed, marshmallow, etc.; also syrup of poppies, paragoric, or laudanum in twenty-drop doses. To neutralize the poison, give a strong solution of tannin, or an infusion of oak bark, or nutgalls.

Poisoning by Arsenic.

Use the stomach pump instantly, if one is to be had; if not, give twenty grains of sulphate of zinc (white vitriol) in a little warm water; and promote the vomiting by filling the stomach with large draughts of warm or cold milk, sweetened water, or flax-seed tea. Or, vomiting may be induced still more quickly, by giving a large tablespoonful of strong ground-mustard, mixed with a teacupful of water.

But the best antidote for arsenic is hydrated sesquioxide of iron. Mix a tablespoonful of this with water, and give this amount every five or ten minutes, until half a dozen doses are taken.

Treat the inflammation of the stomach which follows, by blisters, a bland liquid diet, mucilaginous drinks, etc.

Poisoning by Verdigris, or Acetate of Copper.

Cooking utensils made of copper never ought to be tolerated; yet they are used; and it is from the verdigris which forms upon them that most of the cases of poisoning by copper happen.

Give an emetic instantly, and then two teaspoonfuls of carbonate of soda (bread soda) in a tumblerful of water, to be repeated in ten minutes. White of eggs, diffused in water, and mucilaginous drinks are proper.

Poisoning by Corrosive Sublimate.

This is the common bed-bug poison, and is often taken by mistake.

Mix up quickly the whites of a dozen eggs, with two pints of cold water, and give a glassful of the mixture every two minutes till the stomach can contain no more. If there are not eggs enough at hand, take what there are, and make up the deficiency with milk. Wheat flour, mixed with water, is a good remedy. Use the stomach pump, if it is at hand. Treat the resulting inflammation with leeches and fomentations.

Poisoning by Sugar of Lead, or Acetate of Lead.

Give a ground-mustard, or a sulphate of zinc emetic; then, give diluted sulphuric acid, or, either epsom or glauber's salts.

Poisoning by Strong Lye.

Strong lye is sometimes swallowed by children. The remedy is vinegar, or oil. Vinegar will convert the lye into acetate of potash, and any of the oils will unite with it, and form soap; and neither the acetate of potash, nor soap, will materially injure the stomach.

Poisoning by Nitric, Muriatic, or Sulphuric Acid.

When either one of these acids is swallowed, not a moment of time is to be lost. Fill the patient *full* of calcined magnesia stirred up in water. This is the best remedy; but if it is not to be had, give half an ounce of soap in a pint of water. If neither are at hand, give chalk, or whiting, in water, or even pound fine some of the plastering of the room, and give it in water.

Poisoning by Nitrate of Potash, called Nitre, or Saltpetre.

Induce vomiting by luke-warm water, and by tickling the throat with a feather; but avoid irritating the stomach with the ordinary emetics.

Poisoning by White Vitriol.

Provoke vomiting by warm drinks, and by tickling the throat, and give freely carbonate of soda, in water.

Poisoning by Oxalic Acid.

This resembles epsom salts, and is liable to be taken for salts by mistake. The two can always be distinguished by touching a little to the tongue. Epsom salts taste *bitter;* oxalic acid, *very sour.*

In cases of poison from oxalic acid, give magnesia in water as quickly as possible. When this is not at hand, give chalk, or lime, or saleratus. Use the stomach pump, if it is to be had.

Vegetable Poisons.

The vegetable poisons are quite numerous, and many of them quite as virulent and rapid as any in the mineral kingdom.

Poisoning by Aconite.

Give an emetic of ground-mustard or sulphate of zinc, or use the stomach pump, instantly, and then give stimulants, as brandy, gin, whiskey, rum, etc.

Poisoning by Opium, Morphine, and Laudanum.

Use the stomach pump, if at hand; if not, a powerful emetic of sulphate of zinc, or sulphate of copper; or, if these are not at hand, a tablespoonful of ground-mustard in a teacupful of warm water. If vomiting is not induced at once, tickle the throat with a feather, or with the finger. If sleep is impending, take the patient into the open air, and keep him walking; dash water upon his face, etc. If he still falls into sleep, and appears to be near dying, apply means for artificial breathing as for persons apparently dead from drowning.

Poisoning from Belladonna, Hyoscyamus, Stramonium, and Conium.

These are all narcotics, and when accidentally taken in poisonous doses, the treatment is to be the same as for poisoning by opium. Strong coffee is said to counteract the effect of these articles.

Poisoning by Dogwood, Ivy, etc.

Give some of the salts as a cathartic, and apply a solution of sugar of lead, or, still better, a decoction of witchhazel bark.

Poisoning by Spanish Flies.

Give large draughts of sweet oil, sugar and water, milk, or flax-seed tea. For the inflammation of the bladder, which is produced by it, apply leeches, and a liniment composed of camphor and sweet oil. To relieve the strangury or scalding of the water, give camphor internally.

Poisoning by Prussic Acid.

This is the most deadly of all known poisons. One drop of the *pure acid* will cause immediate death. Give water of ammonia or hartshorn, one part diluted with six parts of water, freely.

Poisoning by Strychnine.

The same treatment as for poisoning by opium, excepting that sweet milk should be freely administered. This has been recom-

mended by one respectable physician, at least, who says he has found it to be a specific. Camphor, two ounces dissolved in a quart of whiskey, and given *freely*, is also said to be an antidote.

Care of the Teeth.

A DECAY and loss of the teeth is common even among the young. Few persons at the age of twenty have sound teeth.

Rotting of the Teeth.—*Caries.*

THIS is not confined to any age, temperament, or condition of society.

The teeth become diseased, die, and drop away, while all the other organs are sound and active.

The Creator doubtless intended that all the members of the same body should be equally durable; but certain laws of nature, violated by us habitually, turn upon us, as it were, in anger, and smite us full in the face, breaking our teeth, and robbing us of the means of preserving the health which we do not appear to prize.

When rotting begins in the teeth, its progress is more or less rapid, and their destruction is certain, unless it is arrested by artificial means.

The enamel is nature's fortification to protect the teeth against external injuries. When this is broken, or worn away, the bone of the tooth becomes exposed, and rotting begins immediately. Whatever has a tendency to crack, break up, or destroy the enamel, therefore, is to be carefully avoided.

Hot Drinks, or hot food, coming suddenly in contact with the enamel, are liable to crack it, and expose the bony substance of the tooth. The enamel is exceedingly brittle, much like glass in its structure, and is easily cracked when exposed to sudden transitions from heat to cold, and from cold to heat.

Luxurious Living often deranges the general health, and causes acid and unhealthy secretions in the mouth, which act injuriously upon the enamel.

Acids are injurious to the enamel; and when taken as medicine, should be well diluted, and in some cases, drank through a tube, so as not to come in contact with the teeth. Sugar is not directly injurious to the teeth, as many suppose; but if allowed to reman about and between them, it may generate an acid which is destructive to the enamel.

A Crowded Condition of the teeth in the mouth causes the enamel to wear away, and leads to rotting; in which case, early attention and advice from a dentist, is quite important.

Food Lodged Between the Teeth, and in their depressions, is a cause of extensive decay. Animal and vegetable matter, when exposed to

warmth and moisture, soon generate an acid which corrodes the enamel. The teeth, consequently, often begin to decay in parts where one presses upon an other, and in depressions, where food lodges and remains. This shows the necessity of cleansing the mouth and teeth often, — particularly after meals.

Mercury, when taken to the extent of salivation, — whether it be calomel, corrosive sublimate, blue pill, or any other form of it, — causes inflammation of the membranes about the teeth, and indirectly produces caries.

Acidity of the stomach, the contact of decaying teeth and dead stumps with sound ones, diseased and ulcerated gums, and, above all, a filthy, unclean, and unwholesome condition of the mouth, are active causes of diseased teeth.

Improper Tooth Powders, as those containing gritty particles, are to be avoided.

Tobacco, by deranging the general health, may be indirectly injurious to the teeth. Smoking blackens the teeth; and though chewing may be useful in deadening the sensibility of the nerve of a decaying tooth, this alone is not a sufficient reason for so uncleanly and disagreeable a habit, while so many agents may be found to produce the same effect.

Tartar. — This is derived from the saliva, and is found, when examined by the microscope, to be composed of myriads of living animals. When first deposited around the teeth, it is in a soft state; but, when not brushed away, it soon hardens, and changes from a yellow to a brown, and sometimes to a black color; and often in children, it becomes a dark green. It destroys the beauty of the teeth, giving them a filthy and revolting look; the setting of the teeth in their sockets is weakened; their appearance is elongated; the periosteum or covering of the fang becomes inflamed and tender; and, if the proper remedy be not applied, the teeth will become loosened, and finally fall from their sockets. It causes the gums to become inflamed, swollen, tender, and ulcerated, and loads the breath with a disagreeable fetor. Its *direct* influence on the teeth is not great; but it vitiates all the secretions of the mouth, and is thus a very efficient, though an indirect cause of decaying teeth. In all cases, it should be immediately and carefully removed, and some astringent wash, made from peruvian or oak bark, be applied to reduce the inflammation and swelling of the gums.

Tooth-Ache.

This is generally caused by an exposure of the nerve which fills the internal cavity of the tooth. This exposure is caused by a fracture, or, more commonly, by the rotting away of a part of the tooth. This nerve is extremely sensitive; and, by coming in contact with the air and acrimonious substances, inflammation is excited, and tooth-ache is the consequence.

Teeth sometimes ache when they are, to appearance, perfectly sound. This may be caused by bony enlargements of the ends of the fangs, inflammation of the periosteum, a peculiar irritability and ague of the face, which excite neuralgia, etc.

Pain of a sound tooth is sometimes caused by sympathy with a decaying one, by a disordered stomach, or by scurvy, pregnancy, tartar, or whatever excites painful sympathetic action in the nerves of the face.

Treatment.— Tooth-ache may be quieted by placing a drop of oil of cloves, or cajeput, or a drop of creosote upon a piece of cotton, and inserting it into the cavity of the tooth, and bringing it into contact with the exposed nerve.

Pains of the face and jaw, when not the consequence of rotten teeth, may be relieved by holding brandy, or whiskey, or rum, or diluted tincture of cayenne, or hot water, in the mouth, and by external applications of laudanum, Oliver's plaster, a mustard plaster, or hops steeped in alcohol, or a blister behind the ear. But for teeth too much decayed to be saved by filling, there is no remedy so proper as extraction.

Filling Teeth.

There is no operation of the dentist of more real and lasting benefit to the patient than that of filling rotten teeth.

A tooth that is well filled before its nerve is exposed, is as serviceable as a sound one, and nearly as durable. Its preservation for many years is perfect and complete.

It is necessary, in the performance of this operation, to remove very carefully all rotten and foreign matter lodged in the cavity; to make the cavity of a dovetail shape, so as to retain the filling; to wipe it perfectly dry; and to press the gold in so as to make the cavity perfectly water and air tight. A tooth filled in this way may be preserved many years, and in many cases, during life.

When decay has gone so far as to expose the nerve and render a tooth painful, the nerve, in all cases, should be destroyed before the cavity is filled; otherwise there may be soreness, and sometimes extreme pain, making the extraction of the tooth absolutely necessary.

A tooth filled after the nerve is destroyed is not as good as if filled before the nerve was exposed; the walls of the cavity are thinner and weaker, and consequently are more liable to break and crumble away when brought into contact with hard substances; and the filling will be more likely to be loosened. There is likewise some danger of ulceration and absorption at the root of a tooth, when filled in this condition, which makes it very important that teeth should be filled early.

Gold foil is preferable to all other substances for filling teeth. If it is properly pressed and polished, it will remain in the mouth for many years without any sensible loss of its substance.

The First Teeth.

It is an imperative duty of parents to see that their children's teeth have early and careful attention.

The health and durability of the permanent teeth depend materially on the healthy condition, regularity, and durability of the temporary ones. It may seem strange that diseases of the first set of teeth should influence the set which is to follow; but when we consider that the rudiments of the second set already exist when the first are cut, it is not unreasonable to suppose they may inherit disease from their predecessors.

Cleaning the Teeth.

The most important rule to be observed in the preservation of the teeth, is to keep them perfectly clean, and never to allow any foreign substance to remain on or about them. A decaying tooth should never be allowed to remain in the mouth; it causes others to decay.

If tartar have been allowed to collect, have it removed immediately. The teeth should be carefully and thoroughly brushed daily with warm water, and the occasional use of a detifrice that is impalpably fine, and that contains no acid.

A Brush has no bad effect upon the teeth, as some suppose, for the parts of the teeth most exposed to the friction of a brush are never the first to begin to decay. This beginning of decay takes place in their depressed surfaces, and where they touch each other. A soft brush is better for the teeth than a stiff one, because the latter is apt to fret the gums, and cause them to recede, which gives the teeth a lengthened appearance.

Teeth in a crowded condition should never be filed, unless they begin to decay.

Tooth-Picks, made of quill, or wood, or ivory, should be used after meals, and all particles of food lodged between the teeth should be removed.

In Sickness, the rules for cleanliness of the teeth should be more rigidly enforced than at any other time, as then they are more exposed to destructive agents, and are liable to participate in the general debility and disease of the system.

Influence of Diseased Teeth upon the Health.

The bad effects of a diseased and unclean mouth upon the general health, are of more serious consequence than most people are aware. In twenty-four hours, we breathe twenty thousand times; and what must be the effect upon the delicate structure of the lungs, when, for days, months and years, the air we breathe is drawn through a depos-

itory of filth, and is poisoned by being mixed with effluvia arising from decayed and diseased matter in the mouth.

The intermittent fevers of the West are caused by the effluvia arising from the decaying matter of low grounds and marshes, which can hardly be more pernicious than the effluvia from the impurity and corruption generated in an unclean mouth, filled with decaying teeth. Dr. Hays says "no species of animal matter is so offensive to the health and vitality of the adjoining substance, whether nerve, or membrane, or any part or portion of the living body, as decaying bone."

Fumigation of Infected Chambers and Other Places.

Nitric Acid Fumigation. — The efficiency of nitric acid in the form of gas, in arresting contagion, and in cleansing infected rooms, ships, and other places, is well established. To obtain the gas, pour one ounce of sulphuric acid upon two ounces of nitrate of potash in a large tea cup, — the cup being placed in a basin containing hot water. The gas or vapor will be immediately disengaged.

This quantity will thoroughly cleanse a small apartment, but if used in a sick room, should be placed at some distance from the patient. In a large room, two cups will be required; and if a whole house is to be fumigated, let several be placed in various apartments, and the doors and windows be closed for half an hour.

Chloride of Zinc. — A solution of the chloride of zinc has great power in arresting contagion, and in cleansing infected places. A small quantity of it will, in a few minutes, cleanse the most offensive apartments.

Chloride of Lime. — This is one of the most powerful disinfecting or cleansing agents known. To prepare it for use, add four gallons of water to a pound of the chloride of lime; stir the mixture well, and after allowing it to settle for a short time, pour off the clear solution, and keep it in well-corked bottles.

Chloride of Soda. — This, in disinfecting power, is about equal to the chloride of lime. In order that it may retain its properties, it must be kept from the light, in a well-stopped glass bottle. When used, it must be mixed in the proportion of one ounce, or two large spoonfuls, to the pint of water. It is excellent for cleansing carbuncles, gangrenous sores, bad ulcers, ulcerated sore throat, and fetid discharges of every kind. A weak solution should be frequently applied.

Uses of Chlorides of Lime and Soda. — These articles almost instantly destroy every bad smell, and all effluvia arising from animal and vegetable decomposition, and entirely prevent their bad influence.

While infectious or contagious diseases prevail in large towns or cities, the rooms should be sprinkled, morning and evening, with

some of one of these solutions. Some of it should be placed in the different rooms, in shallow dishes, — the small bed-rooms being particularly remembered.

In houses where there are typhoid and putrid fevers, and infectious complaints, it is highly proper to sprinkle the solution about the rooms, and occasionally upon the bed-linen; and the air of the room should be frequently renewed. A wineglassful added to the chamber-vessel or the bed-pan will prevent all smell.

Before sending the bed and other linen to the wash, let it be immersed, five or six minutes, in one of these solutions, diluted, as mere washing will not always remove the infection. But the linen should be immediately rinsed in pure water after the immersion; to allow it to dry without such rinsing might injure it.

By pouring a quart of one of these mixtures, added to a pailful of water, into drains, sewers, or cesspools, and repeating the application as may be required, will destroy all their offensive effluvia.

Meat will keep for some time, without any taint, and without the molestation of flies, if immersed in one of these solutions for an instant, and hung up; and all tainted meat, fish, game, etc., will be rendered sweet by a little sprinkling of the same.

To purify water in cisterns, and destroy the animalcules in it, add to every one hundred gallons, about a pint of one of the solutions.

The washing of bedsteads with one of the solutions, and putting it into all the crevices, will destroy bugs.

A room just painted may be slept in safely, if one of the mixtures be sprinkled about, and left in shallow dishes.

Stables, slaughter-houses, hog-styes, privies, and all places from which offensive smells arise, may be thoroughly purified by these mixtures.

Being guardians of the public health of such wide application, and of so great utility, it is surprizing that they are not more used.

Freezing Mixtures.

In treating wounds, inflammations, etc., it is often quite important to have ice, which is not to be obtained without manufacturing it. Accordingly, I give here a few directions for its immediate production.

The salts used should be in a crystalized state, with as much water in them as possible without being damp. They should be coarsely pulverized at the time of using, and put into the water contained in a basin, or other suitable vessel. The water to be frozen should be inclosed in a thin vessel, and immersed in the freezing mixture. To obtain extreme degrees of cold, the ingredients and the vessel should be cooled by one mixture, before being mixed for another.

To five drams of pulverized hydrochlorate of ammonia, and five drams of pulverized nitrate of potash (nitre), add two ounces of water, in a tin, stone-ware, or glass vessel, and you may freeze water, sea-water, milk, vinegar, or oil of turpentine. It will cause the thermometer to sink from 50° above zero, to 10° above; that is, *forty degrees.*

A mixture of five drams of sulphate of soda, and four drams of diluted sulphuric acid, will sink the thermometer seven degrees lower than the above, namely, down to 3° above zero, or *twenty-nine degrees below the freezing point.*

If six drams of sulphate of soda, four drams of hydrochlorate of ammonia, two drams of nitrate of potash, and four drams of diluted nitric acid be put together, the mixture will lower the thermometer 60°; that is, to 10° below zero, or 42° below the freezing point.

Beside the above, the following combinations may be used:

Muriate of ammonia, five ounces; nitrate of potash, five ounces; water, sixteen ounces. Mix.

Nitrate of ammonia, four ounces; crystalized carbonate of soda, four ounces; water, four ounces. Mix.

Nitrate of ammonia and water, equal parts. Mix.

Nitrate of ammonia, and nitrate of potash, five parts each; sulphate of soda, eight parts; and water, sixteen parts. Mix.

Phosphate of soda, nine parts; diluted nitric acid, four parts. Mix.

Sulphate of soda, eight parts; muriatic acid, five parts. Mix.

Sulphate of soda, six parts; nitrate of ammonia, five parts; diluted nitric acid, four parts. Mix.

Freezing Mixtures with Ice. — Snow or pounded ice, two parts; salt, one part. Mix. This will sink the thermometer to 5° below zero.

Snow or pounded ice, four parts; salt, two parts; muriate of ammonia, one part. In this mixture the thermometer will go down to 12° below zero.

Snow or pounded ice, twenty-four parts; common salt, ten parts; muriate of ammonia, five parts; nitrate of potassa, five parts. Mix. Gives 18° below zero.

Snow or pounded ice, twelve parts; common salt, five parts; nitrate of ammonia, five parts. Mix. Gives 25° below zero.

Snow, eight parts; muriatic acid, five parts. Mix. Gives 27° below zero.

Snow, seven parts; diluted nitric acid, four parts. Mix. Gives 30° below zero.

Snow, four parts; chloride of calcium, five parts. Mix. Gives 40° below zero.

Snow, three parts; potassa, four parts. Mix. Gives 51° below zero, or 83° below the freezing point.

Dr. Ira Warren's Paracentesic Instrument.

Puncturing the chest for drawing off water in extensive pleuritic effusion, as practised of late, has proved one of the most valuable operations in modern surgery. Like most new operations, however, it has been embarrassed by imperfect instruments.

The annexed cut represents an improved instrument which I have just invented, by which this operation is made extremely simple and easy. At the right hand is the puncturing instrument, including the

external canula, and the trochar inserted in it. At the letter *i* is a sliding guard which moves back and forth, and may be set at the point of desired depth to which it is desirable to puncture, and made fast by a screw. By this arrangement it may be driven home to the desired depth, without any fear of going too far, or of falling short of the mark. The guard also serves in a measure to keep the instrument steady during the operation, and to prevent inflicting pain by having it oscillate about. At *b* is a tubular attachment, opening into the canula; to this an India-rubber hose is attached, which connects, at the other end, with the cock, *a*, upon the exhausted receiver, *o*. To a cock, *c*, on the other side of the receiver, another rubber hose is fastened, which connects at the other end with an air-pump.

Fig. 177.

The mode of operating is exceedingly simple. First, exhaust the receiver; then quickly, yet gently, plunge in the instrument, and, leaving the canula, withdraw the trocar till the point passes the connecting tube at *b*, when the water will immediately flow, in a full stream, into the exhausted receiver, *o*. The working of the apparatus is extremely beautiful. Five pints of water may be taken away with it in five minutes,—an amount which cannot be got with the old instrument in much less than half an hour. If the patient cannot bear to have it drawn so rapidly, the stream may be wholly or partially arrested, at any moment, by entirely or partly closing the cock, *a*.

The reader will see that the apparatus is so arranged that the admission of air into the chest is entirely impossible.

The artist, in making the drawing for me, has inserted the instrument much further forward than the point usually selected.

My apparatus has a second puncturing instrument, a little larger in size, for the purpose of operating in ascites, or dropsy of the belly.

A BRIEF TREATISE ON THE

HOMŒOPATHIC TREATMENT OF DISEASES.

BY A. E. SMALL, M.D.

In the following pages will be found a reliable guide in the administration of homœopathic remedies for the various ills known to occur in almost every-day life. Nearly every disease incident to the human family is briefly considered, and the corresponding treatment explicitly stated. It must be borne in mind, that homœopathic remedies are addressed to vital forces, whose derangement may be seen in the manifold forms of disease. But, in order to obtain the desired effect from the administration of any remedy for a given case, a certain principle must be observed in its selection. This principle is believed to be a competent guide in affiliating remedies to diseased conditions. The discovery of a universal law of cure, which points out the direct relationship between all diseases and their remedies, is ascribed to Hahnemann, the founder of the homœopathic system of medicine. By numerous experiments with drugs upon healthy individuals, he ascertained that diseases are curable by such medicines as are capable of producing similar characteristics: as, for instance, chamomile will produce a colic, and will cure a similar one from some morbific cause; hence, the formula, "*Similia similibus curantur*," is the principle that guides in the administration of remedies. Every medicine has a specific range of action in the body: one will act on one set of organs, and another on another set; some will direct their energies so as to affect one locality, and others to another. The only way, therefore, of ascertaining how a remedy will direct its action to any local or general disease is by trying it first upon healthy persons in order to ascertain its range of action. As disease manifests its action by symptoms, so remedies show their action by symptoms, in a similar manner; and, when a disease presents itself for treatment, a remedy must be selected whose pathogenetic effects upon those in health resemble the phenomena of the disease. The homœopathic materia medica is made up of a collection of remedies that have been thus tried. Those

employed in this treatise are of this character, and are comprised in the following

* LIST OF REMEDIES.

1. Aconite. 3.
2. Aloes. 6.
†3. Alumina. 6.
†4. Ammonium carb. 6.
†5. Antimonium crud. 6.
6. Apis mellifica. 6.
7. Arnica montana. 3.
8 Arsenicum album. 6.
†9 Aurum metallicum. 6.
10. Anacardium. 3.
11. Baptisia. 1.
12. Belladonna. 3.
†13. Bismuth subnit. 3.
14. Bryonia alba. 3.
†15. Calcarea carb. 6.
16. Calendula. 1.
17. Camphora. 3.
18. Capsicum. 3.
19. Cantharis. 3.
20. Cannabis sat. 3.
†21. Carbo animalis. 6.
†22. Carbo veg. 6.
23. Causticum. 6.
24. Chamomilla. 3.
25. China. 3.
26. Chelidonium maj. 3.
27. Cimicifuga racem. 1.
28. Cicuta virosa. 3.
29. Cina. 3.
30. Cocculus indicus. 3.
31. Coffea cruda. 6.
32. Colchicum. 3.
33. Colocynthis. 3.
34. Conium mac. 3.
35. Crocus sativa. 3.
36. Cuprum acet. 6.
37. Digitalis. 3.
†38. Dioscorea villosa. 2.
39. Drosera rotundifolia. 3.
40. Dulcamara. 3.
†41. Elaterium. 3.
42. Euphorbium. 3.
43. Euphrasia. 3.
†44. Ferrum redact. 3.
45. Gambogia. 3.
46. Gelsemium. 1.
†47. Graphites. 6.
48. Glonoinum. 6.
49. Helleborus nig. 6.
†50. Hepar sulph. 6.
51. Hyoscyamus nig. 3.
52. Hamamelis. 1.
53. Ignatia amara. 3.
54. Iodium. 6.
55. Ipecacuanha. 3.
56. Iris versicolor. 3.
†57. Kali carb. 6.
†58. Kali bichromicum. 3.
59. Lachesis trig. 6.
60. Ledum palustre. 3.
61. Laurocerasus. 3.
†62. Leptandria. 3.
†63. Lycopodium clav. 6.
64. Lobelia inflata. 3.
65. Mercurius corrosivus. 6.
†66. Mercurius vivus. 6.
†67. Mercurius iod. 3.
†68. Mercurius biniod. 3.
69. Mercurius sol. 6.
70. Mezerium. 3.
71. Moschus. 6.
72. Natrum muriat. 6.
73. Nitrum. 6.
74. Nitric acid. 6.
75. Nux vomica. 6.
76. Nux moschata. 6.
77. Opium. 3.
78. Oleander. 3.
79. Petroleum. 6.
80. Phosphorus. 6.
81. Phosphoric acid. 6.
†82. Platina. 6.
83. Phytolacca decandra. 1.
84. Pulsatilla. 6.
85. Podophyllum pelt. 3.
86. Rhus tox. 3.
87. Ruta graveolens. 3.
88. Sabina. 3.
89. Sambucus nig. 3.
90. Sanguinaria. 3.
91. Secale cornutum. 3.
92. Senega. 3.
93. Sepia succus. 6.
†94. Silicea. 6.
95. Spigelia. 3.
96. Spongia. 3.
†97. Stannum. 6.
98. Staphysagria. 3.
99. Stramonium. 3.
†100. Sulphur. 6.
101. Sulphuric acid. 6.
102. Tartar emet. 6.
103. Uva ursi. 1.
104. Urtica urens. 3.
105. Veratrum album. 3.
106. Veratrum viride. 1.
†108. Zincum met. 6.

TINCTURES FOR EXTERNAL USE.

1. Aconite.
2. Arnica.
3. Baptisia.
4. Calendula.
5. Cantharis.
6. Conium.
7. Causticum.
8. Hypericum.
9. Ruta graveolens.
10. Staphysagria.
11. Urtica urens.

* The remedies marked † should be bought as *triturations*. Ask the pharmacist to prepare them all on the decimal scale, and so, also, the dilutions. The triturations may be given dry on the tongue, a small powder the size of a pea; or the same amount or more dissolved in half a tumblerful of water, a teaspoonful at one dose, when it is desirable to repeat the medicine at short intervals.

RULES FOR THE ADMINISTRATION OF REMEDIES.

As specific directions will be found in the treatment of each disease treated of in this work, only a few general rules are necessary.

1. In acute cases, the chosen remedy may be repeated every hour or two hours, until a change occurs; then it is prudent to wait awhile for the result.

2. If there is no favorable reaction within a few hours, or, in very acute pain, within half an hour, select another remedy according to the indications; and, should no favorable reaction follow the administration of this, select another, and so on.

3. When convalescence follows the administration of a remedy, it need not be repeated unless the recuperation reaches a certain point and then ceases; in which event, select a remedy according to indications.

4. The same remedy may be repeated in case of continued convalescence becoming interrupted, provided there is no change other than amelioration of symptoms.

5. A change of remedies is admissible in obstinate cases, when one has been employed for some time without the desired effect. In chronic cases it is well to try the remedy at least a week before changing.

6. In chronic diseases, the remedies need not be repeated oftener than once or twice in twenty-four hours, and even at longer intervals.

FORMS OF MEDICINES FOR ADMINISTRATION.

There are four forms in which homœopathic medicines are prepared for use: 1. Mother tinctures prepared from fresh plants; 2. Triturations prepared from metals, salts, earths, and herbs; * 3. Dilutions prepared from the tinctures; and, 4. Globules medicated with the solutions. The last two are generally employed, and the first two occasionally, in household practice. When water is employed as a medium for the administration of either form, five drops of the tincture or dilution, or ten globules, or three or four grains of the trituration, may be thoroughly mixed in half a tumbler of water, and a dessertspoonful of this mixture will suffice for a dose. The tumbler containing the medicine should be carefully covered, and kept away from the light and from any corrupting odor; and all other medicines, teas, tonics, and stimulants are strictly prohibited during its administration; and all medicated poultices, lotions, and the like, must be avoided, because of their interference with the medicinal action of the remedy.

RULES FOR PRESERVING THE PURITY OF MEDICINES.

1. The medicines should be kept in a small box or chest, exclusively for this use, carefully closed, and in a cool place. Examine the corks often to see that they are perfectly tight.

* Dilutions are recommended to be prepared on the *decimal scale*.

2. Be careful to keep the vials corked always with the same cork, or one that has never been used for any other purpose; and be particularly careful not to misplace the corks, or fail to replace the identical one each time when a vial is uncorked for use.

3. Never put medicine into a vial that has been already used for one of a different kind, unless it be thoroughly washed and baked.

4. Every vial should be labelled, to prevent mistakes; and every glass, spoon, or cup should be carefully cleansed before using it in the preparation of a remedy.

5. Never use the same spoon in giving medicines of a different kind to different persons sick in the same house.

ANTIDOTES TO MEDICINES.

In some exceeding impressible conditions, the remedy chosen may produce intense aggravation of suffering, which may be relieved by the administration of a drop of the *Spirits of camphor*. If *Belladonna* should provoke an aggravation, *Aconite* will antidote its effect, and so will *Camphor;* and this latter is regarded the general antidote of homœopathic remedies, two of which should seldom be given in alternation, because of the liability of their neutralizing the effects of each other. For the same reason it will not do to change from one remedy to another suddenly. A period of from four to six hours should intervene in acute cases, except in emergencies of great pain, and from one to two days in chronic affections.

EXTERNAL APPLICATIONS.

Compresses wet with cold water, covered with a dry bandage, are always a convenient and successful resort for bruises, sprains, and injuries in general. Tepid applications, or cold when agreeable, in the same way, may be applied to local inflammatory affections. Warm poultices, to hot and inflamed surfaces, will often exert a salutary influence. The tinctures named for external use may at times be employed in full strength; but lotions made of a teaspoonful of any one of them, to a cupful of cold water, is the usual form of applying them. Mustard poultices may be employed, either in full strength, or tempered by adding to the ground mustard a due proportion of meal. Simple cerate, cold cream, and healing salves may be employed when needed; but any strongly medicated poultice, plaster, salve, or ointment must not be used when taking homœopathic remedies.

BATHING.

Persons of debilitated constitutions should not bathe too frequently; for those of robust constitutions, this luxury may be indulged in to almost any extent. Bathing in very cold water is not recommended. Tepid baths are the most beneficial, and should be taken regularly throughout the year.

Hot baths are weakening and relaxing. They may be employed for children in convulsions, and to overcome rigidity of the skin. Sulphur baths are sometimes recommended for rheumatism; but they should be taken with caution; and this remark is applicable to all vapor-baths. Sea-bathing is good for dyspepsia, and those inclined to biliary derangements. Consumptives derive but little benefit from any kind of bathing aside from necessary ablutions. The addition of salt to the water is recommended in cases of debility.

DIET AND REGIMEN.

But little need be said about diet here, as that which is appropriate is pointed out in the following pages, as a part of the treatment for each individual case. It may be remarked simply that no medicinal condiment or food, no stimulant or other medicinal beverage, can be employed when taking homœopathic remedies; and, further, all patients must be placed in the best possible condition for recovery. They must have clean and well-ventilated apartments, and plenty of fresh air. They must have clean and well-aired bedding. They must have proper clothes and food to correspond with the appetite and wants of the system. An experienced nurse is of great importance, especially in fevers.

DISEASES INVOLVING THE VARIOUS ORGANS.

Simple Fever.

This disease is a simple acceleration of the pulse, with flushes of heat; and when brought on by fatigue, give four globules of *Arnica;* if from cold, *Aconite;* if from grief, *Ignatia;* if from indigestion, *Belladonna;* if from dampness and chill, *Gelsemium*, or *Rhus tox.*

Inflammatory Fever.

In most cases this disease commences with pain in the head and full pulse, more or less thirst, loss of appetite, constipation of the bowels, and dry, hot skin. One drop of the dilution, or four globules, of *Aconite* may be given in the first stage, every hour, until the skin becomes moist, and the pulse somewhat reduced. *Belladonna* may follow *Aconite*, and be given in the same doses and intervals, until there is a mitigation of the pain in the head; or if the patient becomes weak, and subject to aggravation of suffering from the slightest motion, give a drop, or four globules, of *Bryonia*, every hour, until there is a change; with restlessness, and when from checked perspiration, *Rhus tox.*, same dose as *Bryonia*. In the case of urinary obstruction, give four globules of *Cantharis;* or of flatulent colic, four globules of *Chamomilla*. The diet should be farinaceous gruel or toast.

Typhoid Fever.

In general, the commencement of this disease is denoted by lassitude, headache, and considerable acceleration of the pulse. Then follow stupor or delirium, coldness of the surface, and great prostration. Four globules, or one drop, of *Aconite* may be given at first, every two hours; to reduce the pulse and moisten the skin (by many *Baptisia*, in drop doses, hourly, of the tincture is preferred to Aconite), *Bryonia* may be used after *Aconite*, a dose every three hours. If the patient becomes drowsy, give *Rhus tox.;* cleanse the surface of the patient daily with a towel wet with tepid water; and, if he will take any nourishment, give him beef-tea or mutton-broth; milk is allowable, and rice gruel. When convalescent, allow some light wine three times a day. For the diarrhœa of Typhoid, *Arsenicum*, four globules, after each discharge, is good.

Bilious Remittent Fever.

This disease is so named because it comes on by considerable gastric derangement, headache, and fever, which appears to be subject to elevations and depressions, without any distinct intermissions. In the first

or inflammatory stage, give four globules, or a drop, of the dilution of *Aconite*, and follow it with a like dose of *Ipecacuanha*, and repeat every hour, until the nausea and vomiting are better. If the bowels are constipated, give *Nux vomica* at night, — a single dose of four globules. If there is colic, give *Colocynth*. If there is vomiting of greenish bilious matter, give *Bryonia* or *Pulsatilla*. Diet same as in inflammatory fever.

Intermittent Fever.

The symptoms by which this fever is distinguished are yawning, stretching, shuddering, and chilliness, followed by heat, pain in the back, limbs, head, etc.; and afterwards a copious perspiration, and then an interim of complete intermission. *Arsenicum*, where the chilliness and heat are simultaneous, and where, during the cold stage, there is intense thirst for cold drinks; *Arnica*, where there is soreness of the flesh, as if bruised; *Belladonna*, where headache and chilliness down the back; *China*, where there is ringing in the ears; *Sulphur*, in cases of long standing, where much *Quinine* has been given; *Bryonia*, where there are glairy vomitings during the chill and fever, and where all the sufferings are aggravated by motion. *Apis*, attacks chronic, and preceded by nettle-rash, — followed well by *Nat. mur.*, either to be given three times daily. All the medicines may be administered in drop doses of the dilutions, or four globules; and repeated every two hours between the paroxysms.

Yellow Fever.

Common to the Southern States during the warm season. Nearly all the symptoms of an ordinary bilious fever, in an aggravated form, characterize this disease; and the victims become so sallow, and the surface so yellow, as to give rise to the name "Yellow Fever." When the stage of febrile excitement exists, give *Aconite*. When the nose bleeds, give *Belladonna*. When vomiting of black or dark bilious matters occurs, give *Arsenicum*. For the prostration, or diarrhœa, give *Carbo vegetabilis*, and when the most offensive odor comes from the breath, give *Baptisia*. *Arsenicum* and *Carbo vegetabilis* are the most prominent remedies. The usual drop or four-globule doses may be repeated every two hours, and sometimes every hour. Diet, — barley-water and gruel.

Eruptive Fevers.

Nettle-Rash is a pale-red, stinging eruption, that sometimes is attended with vomiting, and sometimes with some other derangement of the stomach. *Ipecac.* and *Nux vomica* are indicated for the vomiting, and *Apis mellifica*, *Rhus tox.*, and *Sulphur* for the burning, itching, and stinging; *Croton tig.* cures nearly all cases, a favorite remedy with physicians. Doses as usual, and repeated every hour or two hours until relieved.

Scarlet-Rash is the roseola, or red eruption, and is much like the nettle-rash, only less annoying. *Bryonia*, *Pulsatilla*, are the ordinary remedies; and either may be given in doses of four globules every two hours; *Acon.* if wakeful and restless.

Scarlet-Fever usually begins with vomiting, quick pulse, sore throat, headache, and great restlessness. *Belladonna*, when there is a bright

scarlet eruption; *Calcarea carbonica*, when the child is of a scrofulous habit; *Arsenicum*, when there is great prostration; *Helleborus*, when there are dropsical symptoms; *Bryonia*, when the eruption is slow coming out. Repeat the medicines in the usual doses every hour. Diet, — nourishing drinks, toast, and tea.

Measles come on with cough, pain in the head, sneezing, redness of the eyes, and sometimes attended with nausea and vomiting. *Bryonia* will hasten the appearance of the eruption; *Ipecac.*, should it disappear too suddenly, with consequent increase of cough, or vomiting; *Phosphorus* will obviate the inflammatory effect upon the lungs; and *Drosera* will cure the entailed cough. Diet, simple and light.

Erysipelas, either vesicular or phlegmonous, is denoted by a red, burning, and fiery appearance of the face, and sometimes by a Bullar eruption, resembling fly-blisters. *Rhus tox.*, *Belladonna*, and *Bryonia* are prominent remedies, — *Belladonna*, when the head and face are most implicated; *Rhus tox.*, when there is eruption on the extremities, and great weakness; and *Bryonia*, when the suffering seems greatly aggravated by motion; *Arsenicum*, should there be great prostration, thirst, and restlesness,— one of the best remedies in severe cases. Any of these remedies may be repeated every hour. Diet, — barley-gruel, rice-water, beef-tea, mutton-broth, toast, and tea.

Chicken-Pox. — A pustular eruption, attended with slight fever and gastric derangement. One or two doses of *Pulsatilla* will generally remove all the suffering attendant on this disease.

Varioloid is another pustular disease, more severe, as it comes on with pain in the head and back, as if the latter would break; and, being a near relation to Small-Pox, both may be considered under the same head.

Small-Pox, of which varioloid is a modification, comes on with intense fever, spitting, pain in the head and back and lower extremities. All the sufferings are intense. *Nux vomica* will remove the pain in the back; *Bryonia* will hasten the eruption; *Pulsatilla* will aid in carrying it off. As soon as the appetite returns, feed the patient quite generously. In the small-pox delirium, you can give *Stramonium;* and, to prevent pitting, break the pustules, and cover them with *Styptic Collodion.*

Rheumatic Fevers.

Inflammatory Rheumatism is accompanied by pain in the limbs, inflammation of the joints, swelling of the same, and great pain and difficulty in moving about. *Aconite* reduces the fever; *Bryonia* relieves the pain in moving about; *Pulsatilla*, the inflammation of the knee-joints; *Colocynth*, that of the hip-joints; *Nux vomica*, the pain and rheumatism of the back; and *Sulphur* and *Rhus*, the stiffness that ensues during convalescence; *Rhus* is indicated if the cause be check of perspiration, or exposure to wet. Diet, — bread and butter, steak, and other meats.

Chronic Rheumatism is more confined to the muscles than the joints, and is often the sequel of the acute form. *Sulphur* is one of the remedies much relied upon in curing this disease. *Nux vomica* may be given after *Sulphur*, when there is pain in the back or sciatic nerve, and *Rhus tox.* when there is a general stiffness of the limbs. The medicines, in the usual doses, may be repeated every two hours.

Lumbago is simply rheumatism of the back, in the lumbar region, and so stiffens one that he cannot stand erect. *Sulphur*, four globules at night, and *Pulsatilla*, four globules in the morning, will generally cure this trouble. *Cimicifuga* is a very valuable remedy, given hourly, in water.

Sciatica is simply neuralgia of the sciatic nerve, and may be cured in a short time by a galvanic battery. *Rhus* is often useful. *Belladonna*, or its active principle, *Atropine*, is a valuable remedy to administer internally. The diet in all forms of rheumatism, whether acute or chronic, may be generous.

Toothache.

When caused by a cold, *Nux vomica;* when from caries of the tooth, *Mercurius viv.;* at the menstrual period, *Pulsatilla;* neuralgic, *Belladonna*, or *Chamomilla; Aconite* when there is heat in the gums. Dose as usual, repeated every hour.

Diseases of the Alimentary Canal.

Inflammation of the Tonsils is the result of a cold which affects this locality, and causes a swelling and sometimes a suppuration of these parts. When they first begin to inflame, give *Aconite*, and follow with *Belladonna:* repeat every two hours. *Mercurius viv.*, *Lachesis*, and *Mercurius Iodatus* are also good remedies.

Quinsy is the same as Tonsillitis, and requires the same treatment.

Putrid Sore Throat comes on by little vesicles making their appearance in the mouth and fauces, or throat, which soon, by reason of a low, constitutional fever, change color, run together, and constitute the offensive sore mouth which we denominate putrid. *Arsenicum*, *Mercurius vivus*, *Nitric acid*, and *Sulphur*, or *Sulph. acid*, will generally cure. Dose and repetition as before.

Canker of the Mouth.

This troublesome disorder is caused by a disordered condition of the stomach, and requires *Arsenicum* when the breath is foul, the throat dry, and attended with much thirst; *Carbo vegetabilis*, when the system is in a low condition, and there is much coldness on the surface of the body; *Dulcamara*, when produced by a cold; *Hepar sulph.*, when the canker seems indolent, and slow in coming to a crisis; *Natrum muriaticum*, when it assumes the character of Scurvy, or *Mercurius viv.*

Dose and Administration. — Dissolve from two to five drops of the dilution in half a tumbler of water, and give a teaspoonful every two hours. Diet, — avoid salt provisions; use meat-broths, toast and tea.

Inflammation of the Tongue.

The first indications of this difficulty are soreness and difficulty in using the tongue in deglutition or eating. When caused by mechanical injury, or from accidental biting with the teeth, give *Arnica*, four glob-

ules, and wash the mouth with a dilution of ten drops of tincture of *Arnica* in half a tumbler of water. If from other causes, give *Aconite* or *Belladonna* in the same way. When inflammation of the tongue takes the form of ulcers, give *Arsenicum;* of blisters, *Mercurius* or *Lachesis;* when the tongue inflames and cracks, give *Nitric* or *Sulphuric acid.*

Pharyngeal Sore Throat.

This is an inflammation of the pharynx, or of the opening into the upper portion of the passage from the mouth into the stomach. It is sometimes quite serious, and is usually termed "Quinsy Sore Throat." *Aconite* may be given at first, and this may be followed by *Belladonna*, and this again by *Mercurius viv.* Should it become evident that suppuration must take place, give *Hepar sulph.* Whichever remedy is given, let it be repeated every hour until amelioration or change. *Baryta carb.* is often the specific.

Dyspepsia, Indigestion.

Difficult digestion, whatever form it assumes, is termed Dyspepsia, and must be treated in accordance with the symptoms, and the cause that has produced them. Dyspepsia brought on by intemperance in drinking intoxicating liquors requires *Nux vom.;* if from a cold, and the patient is chilly and feverish, *Belladonna*, or perhaps *Bryonia;* if from eating fat meat or rich food, *Pulsatilla;* if from grief, *Ignatia.* Dose, one drop, or four globules, repeated every three or six hours, according to the degree of suffering.

Heartburn, or Waterbrash. — A burning at the pit of the stomach, and a constant inclination to regurgitate sour, acrid, or bilious matter, is termed Waterbrash, and is but a form of Dyspepsia, and indicates *Mercurius*, *Nux vomica*, *Pulsatilla*, *Arsenicum*, *Cimicifuga*, &c., given as above.

Cardialgia, or Gastralgia, is nearly allied to the above, only attended with pain in the stomach, as well as burning, sour, or acrid risings. *Arsenicum*, *Nux vomica*, *Bryonia*, *Calcarea*, *Chamomilla*, *Coffea*, *Colocynth.*, and *Pulsatilla* are remedies indicated in this difficulty; and each may be given and repeated every hour, in the usual doses, until relieved.

Dyspeptic Headache is simply a sympathetic action of the stomach upon the head, causing considerable pain. *Bryonia*, *Belladonna*, *Cocculus*, *Nux vomica*, and *Arsenicum*, constitute the group of remedies to give relief or cure. When cold water, taken into the stomach, is found to disagree with the stomach, either *Nux vomica*, *Arsenicum*, *Pulsatilla*, or *China* will afford relief. When any kind of food disagrees with the stomach, causing distress and headache, give either *Ferrum*, *Camphor*, *Chamomilla*, *Pulsatilla*, or *Sulphur*, in the usual dose of one drop or four globules. If caused by beer, *Colocynth;* by milk, *Calcarea*, *Pulsatilla*, *Nux vomica.* When animal food proves difficult of digestion, or fat meat or gravies, drawn butter, *Pulsatilla*, *Ignatia*, *Nux vomica*, *Cocculus*, &c. Dyspepsia is so common a disease, and afflicts so great a variety of temperaments and habits, we will be explicit in pointing to specific

treatment. For hypochondriacal persons, *Sulphur*, *Nux vomica*, *Ignatia*, for hysterical persons, *Sepia*, *Pulsatilla*, *Hyoscyamus*, and *Lachesis*, for those of a sanguine temperament, *Nux vomica;* for the sympathetic, *Pulsatilla;* for the bilious, *Mercurius viv.;* and for the melancholic, *Nitric* and *Phosphoric acid*, *Aurum metallicum*, &c. When those of a nervous temperament are afflicted with Dyspepsia, we find *Valerian*, *Hyoscyamus*, *Pulsatilla*, *Ignatia*, and *Moschus* good remedies; those of a scrofulous habit require *Calcarea*, *Arsenicum*, and *Sulphur*, students afflicted with Dyspepsia require *Nux vomica*, *China*, and *Ferrum*. Dose and repetition as before.

Sea-Sickness.

There is no remedy that will prevent sea-sickness, and no condition of health capable of always resisting it. But the effects of the sickness, which are often distressing, can be removed by *Cocculus*, *Nux vomica*, and *Ignatia*. If there remains an inclination to retch after the sickness has passed, give *Ipecac*. *Petroleum* is often taken as a preventive with success.

Mucous Vomiting.

This is simply sickness at the stomach, which may arise from its irritable condition, and result in vomiting of slime, or mucus. The remedies that will obviate the difficulty are *Ipecac.*, *Rheum*, *Pulsatilla*, and *Veratrum*. Usual dose and repetition.

Vomiting of Blood.

This may be caused by mechanical injury of the stomach, and requires *Arnica;* if caused by pregnancy, *Arsenicum;* if from retained menses, *Phosph.* or *Pulsatilla;* if from acrid humors, *Arsenicum* or *Ipecac.;* if from suppressed eruption, *Sulphur*.

Gastritis, or Inflammation of the Stomach.

This is indicated by severe pain in the stomach, continuous vomiting, heat over the region of the stomach, quick and feeble pulse, cold feet, and pain in the head. The remedies for Gastritis are *Aconite*, *Bism. subnit.*, *Arsenicum*, *Belladonna*, *Ipecac.*, *Tart. emetic*, *Veratrum*, *Lobelia*, and *Cocculus*, and sometimes *Nux vomica*. Dose and repetition as usual.

Gastrodynia, or Cramps in the Stomach.

A pain in the stomach, with cramp, is very distressing, and cannot be mistaken; for the cramp is a sudden spasmodic action of the muscles of the stomach, which seems like taking the breath out of one. *Pulsatilla*, *Nux vomica*, and *Colocynth* are the remedies. Any one of them will be likely to afford prompt relief. *Dioscorea* is useful.

Inflammation of the Bowels.

A severe pain in the bowels, with distention, and such soreness to the touch that weight or pressure cannot be borne, betokens inflamma-

tion. *Aconite* may be given in the usual dose, every half-hour at first. If perspiration occurs, and the vomiting continues, give *Bryonia* in the same way. If there is tympanitis, or distention, so that percussion upon the bowels causes them to sound like a drum, *Terebinthe*, *Arsenicum*, and *Mercurius* must be consulted. If the discharges from the bowels, while the inflammation lasts, are acrid, give *Arsenicum*, and follow with *Bryonia*. If there is strangury, or inability to pass urine, *Cantharis*. It would be better, in treating so formidable a disease as this, to drop ten drops of the selected remedy into half a tumbler of water, and give a teaspoonful every half-hour or hour, until amelioration or change. Compresses on the abdomen are indicated.

Chronic Inflammation of the Bowels.

Acute inflammation of the bowels sometimes passes off, leaving them susceptible to entailed inflammation from trivial causes; the mucous coat may have been left in a semi-ulcerated condition, from which there will be occasional vomiting, and muco-purulent diarrhœa. The remedies for this disease are *Nitric* and *Sulphuric acid*, *Arsenicum*, *Sulphur*, and *Phosphorus*. The doses may be as usual; but the remedy may not be repeated more than twice a day.

Inflammation of the Peritoneum.

Peritoneal inflammation is often considered in connection with inflammation of the bowels, and requires nearly the same remedial treatment. The disease is known by the extreme sensitiveness of the abdomen to touch; and the tenderness is so great as to be unable to bear the weight of bed-clothes. *Aconite* given in the usual doses every half-hour, until the skin becomes moist, and then *Belladonna*, or *Verat. viride*. If there is thirst, *Arsenicum; Pulsatilla*, if in females. *Nux vomica*, if the bowels are constipated. If dropsy of the abdomen follow, give *Helleborus nig.*, or *Apis mellifica*. Diet, — a very light gruel of corn-starch or farina.

Diarrhœa.

A looseness of the bowels, which may be watery, bilious, pappy, painless or with pain. A merely relaxed condition of the bowels may be cured by a single dose of four globules of *Pulsatilla;* or, if not arrested by this, give *Mercurius*. A watery diarrhœa may be arrested with *Chamomilla*, *Nux vomica*, or *Veratrum;* a bilious diarrhœa, with *Arsenicum* and *Mercurius;* a painless and involuntary diarrhœa, with *Phosphoric acid*. Diarrhœa with colic requires *Chamomilla* and *Colocynth;* tinged with blood, *Ipecac.;* with undigested food, *Pulsatilla*. From fruit, often *China*. The dose and administration must accord with the case. Either of the remedies may be given in water, a teaspoonful every hour; five drops of the dilution, or ten globules in half a tumbler of water, may be the mode of preparation. The diet for persons suffering from diarrhœa may be mutton-broth, beef-tea, boiled milk, or toast and tea, as the patient may elect.

Dysentery.

One of the most formidable and prostrating diseases is Dysentery. It usually begins with a diarrhœa, though occasionally with constipation, after a season of lassitude, and increases until mucous discharges from the bowels follow. The disease is characterized by much straining when trying to evacuate the bowels. This straining is involuntary and painful. Just before there is an inclination for a stool, there is usually a sharp pain in the lower portion of the abdomen. Dysenteric discharges are mucus mixed with blood, or pure blood, or no blood at all. For dysentery with no blood in the stools, and yet much tenesmus, *Gamboge;* when the tenesmus is low down, *Aloes;* when the mucus is tinged with blood, *Mercurius corrosivus*, the leading remedy, especially if the tenesmus is painful. To arrest a dysentery where the discharges are pure blood, and very painful straining and thirst, *Arsenicum*. For much tenesmus, and discharge of mucus mixed with blood, *Ipecac*. Whichever remedy is administered, let the usual dose be given immediately after each stool, until relieved. The diet in this disease is somewhat important. Water cannot be allowed in great quantities, but small bits of ice may be held in the mouth of the patient; barley-water, flavored with lemon, may be allowed as a drink; rice-water; and, if the patient has any appetite, he may be allowed mutton-soup, beef-tea, and lamb-broth; but chicken-broth must be entirely prohibited. Enemas of cold water or rice water, after each discharge, are beneficial.

Chronic Dysentery.

Symptoms much like those of the acute, but occurs frequently as a weakness left after a protracted attack of the acute form. *Sulphur*, *Sulph. acid*, *Calcarea carb.*, *Ferrum*, and *Carbo vegetabilis* are remedies employed to overcome the difficulty. *Sulphur* may be given in daily doses for a while, and then *Nitric acid* or *Sulph. acid*, or *Calcarea*, until a cure is completed. Diet in Chronic Dysentery should be very sustaining, and wine may sometimes be allowed.

Cholera Morbus.

This disease begins with severe pain in the stomach and bowels, and then severe vomiting and purging, until seemingly there is nothing left to be discharged from the system. *Arsenicum* and *Verat. alb.* are the leading remedies; *Nux vomica* may be given to stop the vomiting; *Ipecac.*, *Tart. emetic*, *Podophyllum* are severally good remedies, and any one of them may complete the cure; four globules may be given every fifteen minutes until relief is obtained.

Asiatic Cholera.

More formidable than Cholera Morbus is Asiatic Cholera, as its attacks are insidious: first, by painless diarrhœa, which seems to indicate that all the contents of the alimentary canal are in a soluble condition. Floods of rice-water discharges pass from the bowels, and the same matter is vomited profusely. After a time, the lower extremities begin to cramp, and then the cramps come in the abdomen; and, if the disease is not

arrested, the patient soon passes into collapse, and then to the grave. The treatment of this disease in the early stage is very important. Very few cases need to prove fatal, if timely resort to the proper treatment is had. As soon as the patient is attacked with diarrhœa, let him go to bed, and take *Veratrum album.* If he has great thirst, let him take *Arsenicum.* If without pain, *Phosphoric acid.* If with vomiting and purging, and great prostration, *Iris versicolor.* Other remedies, such as *Elaterum*, *Secale cornutum*, *Camphor*, and *Mercurius viv.* may be consulted. *Cuprum acet.*, if with violent cramps. The medicines may be administered every thirty minutes. In the collapse stage, give *Muriatic acid*,—ten drops in half a tumbler of water, a teaspoonful every twenty minutes. But little time can run to waste at any stage of the disease; every moment requires vigilance and attention. Should the disease pass over, and the patient is left, he must first have a stimulating diet, and then more and more generous, as he can bear it.

Constipation, Costiveness.

A confined condition of the bowels is scarcely a disease by itself, but a symptom that attends many maladies. In a torpid state of the liver, it is generally manifest, and requires a treatment tending primarily to affect this organ, and thence the bowels. When there is a sense of fulness in the rectum, *Bryonia;* when a tedious constipation, that indicates great torpidity of the bowels, *Lycopodium;* a constipation following a diarrhœa requires *Mercurius viv.* or *Sulphur;* a constipation resulting from a collection of hardened fæces requires *Sulphur* and *Nux vomica*, or *Silicea.* Two doses a day, of any of the remedies, will be sufficient. A diet for those addicted to habitual constipation is important: cornmeal mush, brown bread or bran bread, prunes, apples, and other kinds of fruit are recommended.

Invermination, Worms.

This trouble is indicated by the child picking its nose, and by voracious appetite, restlessness at night, colic, and sometimes diarrhœa and pale expression of the face. The remedies for this difficulty are *Santonin*, *Cina*, *Spigelia*, *China*, and *Sulphur.* *Santonin* will suit better for the long round worms, and *Cina*, *Calcarea*, and *Nux vomica* for the pinworms. Dose and administration as usual, three times a day.

Protrusion of the Intestine.

Falling of the bowels, as the protrusion is usually termed, is caused by protracted diarrhœa, and straining at stool, while the intestine is weak and relaxed. *Podophyllum*, *Mercurius viv.*, *Ignatia*, and *Aloes* are remedies that will cure the difficulty. Either may be given three times a day.

Acute and Chronic Inflammation of the Liver.

Denoted by pain in the right side, below the ribs, sometimes severe and at others dull. If there is fever, give *Aconite* or *Verat.*

viride, and follow with *Nux vomica* in Acute Hepatitis, and repeat every hour until relief or change. If much thirst, give *Arsenicum*. In the chronic form, a daily dose of *Sulphur* or *Sepia*, *Mercurius viv.*, *Nux vomica*, *Pulsatilla*, or *Podophyllin*, will do as much for the patient as any treatment in the world.

Jaundice.

When the gall-duct of the liver becomes obstructed, and the bile is prevented from passing off in the usual way, it seeks an escape through the skin, and gives it a yellow color. This is Jaundice. *Podophyllin*, *Chelidonium*, *Mercurius*, *Dulcamara*, *Leptandria*, and *Nux vomica* are competent to cure the severest cases. *Carbo vegetabilis*, in a crude form, may be given in massive doses when an offensive odor comes from the mouth or breath. The patient, having no appetite, must be supplied with some farina or rice, cooked in the most delicate way.

Inflammation of the Spleen.

The spleen, being an associate purificatory organ with the liver, is liable to similar affections. When inflamed, it is manifest by pain in the left side, below the ribs. The same remedies that affect the liver will also affect the spleen. For congestion of the spleen caused by running, immoderate laughter, etc., *China*, a single ordinary dose, will answer.

Painter's Colic.

The effects of lead upon the alimentary canal are sometimes disastrous; and painters who work much in mixing the various preparations of white lead are liable to imbibe sufficient of its poisonous quality to give them a most distressing colic: hence its name. The remedies employed in antidoting the effects of the lead are *Opium* and *Alumina*, or *Colocynth*. Should the first-named remedy fail to afford relief, try the next, and so on, in doses of three drops of the dilution in a spoonful of water. *Olive oil*, a wineglassful every three hours, is good.

Piles, Hemorrhoids.

There occurs in the rectum a class of small tumors, caused by congestion of the hemorrhoidal veins; and these sometimes become so swollen as to protrude from the anus. Sometimes these protruding tumors are numerous, and resemble a bunch of grapes. They are exceedingly painful, and destructive of comfort. To cure them is of the utmost importance. Constipation being often one of the proximate causes, such remedies as overcome this condition must be called into use. *Nux vomica*, taken at night, has often proved salutary. *Sulphur*, when the tumors are painful, and sting and burn so as to be almost unbearable. For Bleeding Piles, *Hamamelis Virginica* is particularly recommended. For excessively burning piles, *Arsenicum;* and for those of a blue color, *Conium*, or *Muriatic acid*. Each of these remedies may be employed in the liquid form, and three drops of the dilution may be taken in a spoonful of water every night. The tincture of *Podophyllum* is also a valuable remedy, and may be administered as above; and so also is *Collinsonia*. To designate

an appropriate diet for one afflicted with Piles requires a little care. Salt provisions must generally be avoided. The free use of stimulating drinks is pernicious. Bran-bread and fruits are commendable. Meats, not highly seasoned, are allowable, and most kinds of vegetables.

Itching of the Anus, which sometimes is a concomitant of Piles and sometimes of worms, is cured in the first instance with *Sulphur*, and in the latter with *Cina*. The usual dose should be given night and morning.

DISEASES OF THE RESPIRATORY ORGANS.

THE organs of respiration embrace the nose, larynx, trachea, broncha, lungs, pleura, heart, and their appendages. We will therefore consider the diseases that affect them in their order.

Coryza, Cold in the Head.

When, from exposure to cold, the nose becomes stopped, and there is an inclination to sneeze, and the eyes become more or less affected, the following remedies, as indicated, will prove useful: *Nux vomica* at night, should the Coryza be more apparent in the afternoon or evening, and particularly if it is attended with cold affecting the entire system. *Stibium*, or *Tart. em.*, is a good remedy to lubricate the stoppage of the nasal passages; *Hepar sulphur*, also, when this stoppage is painfully disagreeable; *Arsenicum*, or *Euphrasia*, when there is a thin, acrid discharge from the nose. *Pulsatilla* is best for children and ladies, when suffering from Nasal Catarrh. Coryza is synonymous with acute Catarrh, as both affect the mucous membrane that lines the cavities of the nose.

Chronic Catarrh is much like the Acute, only all the symptoms have become persistent. Acute Catarrh is often cured in a few days by *Mercurius*, *Nux vomica*, *Belladonna*, *Pulsatilla*, *Tart. em.*, *Hepar sulphur*, and *Sulphur; Mercurius*, for stupefying headache with catarrh; *Nux vomica*, when the catarrh occasions nausea; *Belladonna*, when there accompanies the difficulty pain over and in the eyes; *Pulsatilla*, when there is depression of spirits; *Tart. em.*, *Hepar sulphur*, and *Sulphur*, to remove obstructions in the nasal ducts, and to subdue irritation and soreness of the external orifices of the ducts. Doses as usual, repeated three times a day.

In the treatment of Chronic Catarrh, other remedies are called into requisition. *Aurum metallicum*, if there is a heavy yellow discharge from the nose, or crusts form at night; *Mercurius iodatus*, in scrofulous persons; *Aurum muriaticum*, if there is any affection of the vomer, or partition of the nose; *Sulphur* and *Hepar sulphur* are both valuable remedies, as are *Arsenicum* and *Lachesis*, when the peculiar symptoms are such as to indicate their affiliation. The remedies for the chronic form need not be repeated so often; once in twenty-four hours, in the usual dose, is sufficient.

Inflammation of the Larynx.

The upper part of the windpipe, or trachea, is termed the "Larynx;" and, when inflamed, it is said to be affected with Laryngitis: and this may be acute or chronic.

Acute Laryngitis, or Inflammation of the Larynx. — This trouble is denoted by cough, hoarseness, and sore throat, affecting the voice, and rendering respiration somewhat difficult, and conversation fatiguing or painful. It comes on from a cold, and may be the continuation of a nasal catarrh. With the cough there is usually some expectoration, or else dry, uncomfortable sensation, and inclination to be clearing the throat. If the pulse is febril or full, give *Aconite* in the first stage; and, if there is painful soreness of the larynx, give *Belladonna*. *Aconite* will remove the fever, and *Belladonna* the congestion of the capillary vessels of the mucous membrane, which causes the soreness. *Mercurius viv.* often follows *Belladonna* well. If, after the employment of these remedies, expectoration of mucus occurs from coughing, give *Phosphorus* or *Sanguinaria*. If the cough is tight, as if the larynx was closing up, give *Sambucus*. The remedies, in the usual doses, may be repeated every two hours. The diet should be simple, but nutritious.

Chronic Laryngitis, or Inflammation of the Larynx. — The symptoms of this form of the disease are similar to those of the acute variety, only the cough and irritation are constant, and the expectoration sometimes great. The disease becomes chronic from the weakening of the organ after one or more acute attacks of the disease. It sometimes mitigates in warm weather, and returns again in winter. *Argentum metallicum* is a good remedy for the chronic form, when characterised by soreness of the throat. *Belladonna* is always useful when the difficulty is aggravated by a cold; *Phosphorus*, when there is considerable collection of mucus, and *Hepar sulphur* when there are excessive dryness and hoarseness. *Causticum* is particularly useful when the inflammation is persistent, and the cough constantly excited, and when it resembles a croupy cough, and comes on spasmodically or in paroxysms. When Chronic Laryngitis is not kept in check or cured, it soon runs into that formidable disease known as Laryngeal Consumption, or becomes attended with hectic fever. In such a case, give *Stannum*, or perhaps *Sulphur;* but in no case more than one dose a day. The patient should be warmly clothed, and should always provide for tempering cold air before it is inhaled into the lungs. The diet must be nutritious, and strictly non-medicinal.

Croup.

Croup is of two kinds, spasmodic and membranous. The spasmodic is the result of a cold; and it comes on with a hoarse, rough cough, which is often spasmodic and suffocating. The catarrhal or membranous comes on like a cold, and then supervenes a crowing cough and copious collection of mucus; and sometimes an exudation of a membranous character fills the larynx and upper portion of the trachea. For spasmodic croup, *Tartar emetic* is undoubtedly the best remedy; *Aconite*, when there is

fever: *Belladonna*, if the throat is sore; *Ipecac.*, if the breathing is asthmatic. In membranous croup, a resort must be had to *Aconite* at first, to induce perspiration; if this fails, give *Bryonia*, and then *Spongia*, *Iodine*, *Bromine*, and *Hepar sulph.*, in the order mentioned. The usual doses may be given every fifteen or twenty minutes when the symptoms are alarming. Croup goes under the technical name of Cynanche Trachealis, because it implicates both the larynx and windpipe.

Inflammation of the Windpipe. — *Tracheitis.*

There is some resemblance of this disease to croup; and yet it may occur, and not manifest that peculiar character. It is denoted by cough, sometimes exceedingly tight, at others looser, greater or less obstruction of the breathing, and some pain and soreness of the throat above, and a tickling, raw feeling below, towards the bronchial tubes. *Aconite* is essential in the treatment of this difficulty, and also *Belladonna*, *Bryonia*, *Phosphorus*, *Causticum*, *Hepar*, *Sanguinaria*, and *Spongia*. It is to be observed, however, that only one of these remedies must be given at a time; five drops in half a tumbler of water, and a teaspoonful every thirty minutes. Diet simple and non-medicinal.

Acute Bronchial Inflammation. — *Bronchitis.*

As the names implies, the bronchial tubes becomes highly inflamed in this disease, or, rather, the mucous membrane that lines them. There is much cough and expectoration. This disease is called Catarrhal Fever in its acute form; and, when the substance of the lungs becomes affected, it amounts to Pneumonia. Acute Bronchitis requires, for the reduction of fever, *Aconite* or *Bryonia; Belladonna* may follow; and, when copious expectoration commences, give *Phosphorus;* and, some time after, give *Hyoscyamus*, especially for the cough at night, and also *Calcarea carb.* for the soreness and cough that may be created. Repeat the medicines, in the usual doses, three times a day. Diet as in all febrile diseases. Barley or flaxseed tea for drink, and a light diet of toast, is best.

Chronic Inflammation of the Bronchia.

Like the acute form of the disease, it has its seat in the mucous membrane that lines the bronchial tubes, and is believed to be the sequel of Acute Bronchitis. It is always accompanied by a cough, and more or less expectoration; now and then a paroxysm of fever. It is a tedious and troublesome disease; and, when not cured, is always better in warm weather, and much aggravated in cold; and this would point to a perpetual warm climate as its cure. When there are paroxysms of fever, give *Aconite;* if there is pain in the chest, *Balladonna;* profuse expectoration, *Phosphorus*, or *Lycopod.;* hectic fever, *Stannum;* when the throat is sore, give *Causticum.* Great care must be taken in the treatment of this malady, if a cure is expected, or otherwise it will terminate in a lingering consumption. The most generous living the patient's appetite will admit of must be supplied, but free from medicinal condiments.

Lung Fever. — *Pneumonia.*

Lung fever is indicated by pain in the chest, cough, flushed face, quick pulse, rusty expectoration, headache, loss of appetite, and oppressed breathing. *Aconite* or *Bryonia* may be given, in the usual dose, every hour until the skin becomes moist; *Belladonna*, if the pain continues in the chest, every hour until relief, or a change is necessary; *Bryonia* may follow *Belladonna*, if heat in the chest is a prominent symptom; and *Phosphorus* may follow *Bryonia*, provided the expectoration has changed, and a more plentiful secretion of mucus is thrown off. Each medicine may be given in hourly doses when called for.

This disease becomes Typhoid Pneumonia when the fever accompanying the inflammation is typhoid; in which event *Bryonia* may be given in the first stage, and *Belladonna* if there is a manifest inclination to sleep. When the patient begins to cough up mucus tinged with blood, give *Phosphorus;* and, if very much prostrated, give *Rhus tox.* As to diet in Pneumonia, give the patient any light, nourishing, and soothing drinks, as jelly-water, barley-water, rice-water, &c. Application of warm compresses to the chest is recommended.

Whooping Cough. — *Tussis Spasmodica.*

This disease often comes on like an ordinary cold, and the victims are observed to have frequent coughing fits; and when there is no fever or loss of appetite, and the fits of coughing continue to be repeated, it may fairly be inferred that whooping cough is progressing. Soon the child or patient will begin to whoop, and to experience frequent paroxysms, and draw in a long breath, or whoop, which is followed by numerous short expirations. *Drosera* will mitigate the severity of the paroxysms, and so will *Hyoscyamus*, *Corallia rubra*, *Sanguinaria*, and *Causticum; Chelidonium*, if there are symptoms of pulmonary congestion; but there is no remedy known that will break it up at once. Give a dose of the selected remedy immediately after each paroxysm.

Pleuritis. — *Pleurisy.*

Inflammation of the pleura is denoted by sharp, shooting pains in the sides of the chest, that interfere with respiration; quick pulse, flushed face, great heat over the chest, &c. *Aconite*, in the usual dose, may be given every twenty minutes, and a cloth compress of warm water may be applied to the region of the pain. *Aconite* may be followed with *Phosphorus*, given every hour until relieved. *Bryonia* is good.

Asthma.

Difficult and laborious breathing may be hereditary, or be brought on by a cold, over-exertion, or exposure of some kind. It comes on in paroxysms that sometimes interfere with the respiration to so great a degree as to oblige the patient to sit or stand in order to get breath. Many cases are entirely curable with *Ipecac.*, *Arsenicum*, *Apis mellifica*, *Apocynum*, *Lobelia*, and *Tart. emetic.* When one remedy fails, try the next, until a fair warfare with the disease has been encountered.

Bleeding from the Lungs.

This trouble is occasioned by the rupture of some of the blood-vessels in the bronchial tube, caused either by mechanical injury or tubercles. If from the former, *Arnica* is the remedy; if from the latter, *Hamamelis*. In case of pain and inflammation, give *Phosphorus;* and if motion aggravates, give *Bryonia*. Let the patient sit up, if able, in an easy-chair, until the bleeding ceases. If fever and excitement of the circulation exist, give *Aconite* often.

Consumption.

This formidable disease may be hereditary, or result from accidental causes. When hereditary, it may not develop itself until adult age; and one of the first signs is extreme sensitiveness to cold, a slight cough, defective nutrition, and extreme emaciation; night-sweats come on subsequently, with hectic fever; and, at a later stage, there may be diarrhœa, which resists remedial measures, and exhausts the life of the patient. That kind brought on as the sequel of primary affections usually supervenes upon bronchitis or some other exhaustive disease that proves destructive to nutrition. In the first stage, or when chilliness, debility, and loss of flesh become apparent, much benefit can be obtained from the use of good old Bourbon or rye whiskey: from a half to a whole wine-glassful may be taken twice a day. The introduction of carbon into the system in this way has often proved of great service. When there is deep-seated pain in the lungs, especially in the upper portion, *Lycopodium;* the usual dose may be given every day, and continued as long as any benefit is perceived. *Lycopodium* may be followed by *Stannum* or *Sulph.*, provided there is any hectic fever; by *Carbo animalis* when there are night-sweats. If the cough becomes troublesome, and the expectoration muco-purulent, *Phosphorus* in the usual dose may be given twice a day. If occasional hemorrhage, *Belladonna* may be given, if there is pain; *Ipecac.*, if there is asthmatic breathing; and *Hamamelis vir.*, if there is bleeding from the lungs without much pain. For the first stage of bronchial consumption, see the treatment directed for Bronchitis. After tubercles become manifest, the same remedies may be indicated as for the hereditary disease. The diet for consumptives should be fish, game, beef, mutton, and vegetables such as potatoes, beans, and egg-plant; butter and cream, with toast, are also allowable. Let the diet be as generous as the patient can take.

For the conclusion of Homœopathic remedies, see pages 785 to 878.

PROCESSES OF THE HYDROPATHIC TREATMENT.

For the description of the hydropathic appliances contained in the following pages, I am indebted, in substance, to the "Hydropathic Family Physician," by Joel Shew, M. D., author of several popular works upon the principles and practice of hydropathy. I have not uniformly adopted his exact language, which is not always the best he might have chosen to express his thoughts.

Priessnitz is admitted to have been the originator of the hydropathic modes of treating diseases. He was an unlearned man, though he had original powers of mind; and, imperfect as the treatment is, he benefited his race by conferring it upon the world.

At first, and for some time, baths were made too cold, and were continued too long; the result was, much injury to the patient in many cases. Time and experience have brought a better adaptation of the temperature and continuance of the water appliances to the symptoms, constitution, and temperament of each patient. Formerly, weak, exhausted, and nervous persons, not less than the full-blooded and strong, were put into the wet-sheet pack, and reduced near to death's door; and there is reason to believe that in some cases where the practice is in ignorant hands, this barbarity is not wholly discontinued. The practice, however, is now mainly in better hands; and although I by no means admit its sufficiency as a system of remedial agencies, I am persuaded it is doing some good. Used in connection with the ancient system of regular medicine, which is the joint product of time, science, and experience, the water treatment, moulded and modified to the circumstances and strength of the patient, is an auxiliary of no mean power. As such, I accept it. As such, it is received by hundreds and thousands of regular practitioners throughout the world. Further than this, it never can or will be generally received. By pushing it beyond this, its rightful and honored sphere, its friends only limit its progress, and injure its influence.

The following is the substance of Dr. Shew's description of hydropathic appliance.

The Wet-Sheet Pack.

In this process a coarse linen or cotton sheet is used, long enough to reach from the patient's head to the soles of his feet, and about two yards in width. The bed is stripped of all its covering, one or

two pillows only being left for the head. One or two comforters are then spread upon it, and over these the same number of woollen blankets, which are less injured by wet than cotton comfortables. The sheet having been pretty well wrung out of cold water,—always pure and soft, if such can be had,—is then spread out smoothly upon the blanket. The patient, being undressed, lays himself upon the sheet, and, his arms being held up, an assistant laps one side of it over the body and lower limbs; when, the arms being dropped at the side, the other part of the sheet is, in like manner, lapped over. The blankets are then, one by one, brought over the person in the same way, and tucked under from head to foot. Comfortables may be added, if necessary. (Fig. 178.)

FIG. 178.

It is always best to place a wet towel, covered with a dry one, on the patient's head while he is packed. If too much chill is not produced, the dry one may be left off.

This is the ordinary way of taking a pack in *chronic* disease.

The wet sheet is one of the most soothing and agreeable of all the water appliances. Hence it is that it is so often misused. It is so delightful, and tends so much to produce slumber, that the patient never feels ready to get out of it. But this slumber,—so profound and sweet as it often is,—he should remember, *may* be only an apoplectic stupor, which leaves him with a swimming head, attended with faintness, perhaps, and ending in a severe headache; giving him, in short, a congestion of the brain. All this happens in consequence of robbing the skin too long of the air it should breathe.

There has been a notion at some of the establishments that the wet sheet is to be used for sweating; and to this end, the patient has been literally stewed hour after hour, in some cases, even four, five, and six hours in succession, with the view of sweating him. All such practice is hurtful. If the patient gets better under it, it is in consequence of the good effects of water used in other ways, coupled with the ever-important adjuncts, air, exercise, and diet. In later times, Priessnitz never sweat patients at all, much less in wet sheets. If a man must sweat, leave off the wet sheet assuredly, as that only hinders the operation. Use the blanket pack, or the vapor bath.

How Long shall the Pack Continue?—Here, too, there has been, and still is, much error in hydropathic practice. "Stay in the pack till you get warm," has been the old doctrine. But some get warm at first, and afterward get cold;—so at least they feel. What is to be done?

One of Priessnitz's improvements was, to give short packs. "Remain enveloped for fifteen or twenty minutes only," he said. "If you are not able to bear the pack in that way, take the rubbing wet sheet and the lighter processes until you are." In some cases he gave two or three of these short packs in succession, the patient rising between

each to take an airing, a rubbing wet sheet, or other bath, and then returning to the pack.

Thus far the wet sheet has been spoken of as used in *chronic* diseases. In acute attacks it is managed differently, according to the case. If the object be to abstract caloric from the body, we cover the sheet but little, — with a single dry sheet, or a blanket or two, or, perhaps, with none of these.

We know that if we keep a towel about a keg of water in a hot day, the water will be made cooler by evaporation. In the same way, when a patient is hot and feverish, we keep one, or, still better, two wet sheets around him, without other covering, and thus bring down the heat and circulation to any desirable degree. We sprinkle water upon the sheets, or rewet them as often as is necessary, — in some extreme cases of fever continuing them a whole week or more. Experience teaches that the continuous application of the wet linen is, in such cases, a most serviceable application, and one that tends most powerfully to induce in the dermoid structure its natural and healthful state.

The Wet Sheet Acts by Absorption. — It draws morbific matter *out of the body*, as any one may see who applies the sheet for a short time, and then washes it. Observe, too, what an odor comes from the sheet when a diseased patient has been packed. At the same time, it absorbs the pure water into its finest tissues on a large scale, thus supplying that fluid which of all substances the system, under such circumstances, most needs. This moist warmth of the sheet also acts as a most soothing poultice.

The Wet Dress.

A MODIFICATION of the wet sheet, and in some respects an improvement, is the "wet dress," so called.

A coarse linen or cotton dress is made with large arms, so that one may take the application without help. The dress being wet and applied, the patient lays himself upon blankets, in which he wraps himself just sufficiently to become comfortable. Or, he may have dry flannel dresses to put on over the wet one, and then lie in a common bed. In this application, the air is not excluded from the surface to anything like the same extent as in the common tight pack. Hence, a patient may remain in it a half, or the whole of the night, if he chooses, — being careful to become neither too warm nor too cold. Rewetting once or twice in the night will be of service. Often in a single night a bad cold may be thrown off in this simple way.

The Half Pack.

MANY patients have so little reactive energy, that while they can bear a half pack, so called, the entire sheet would abstract so much caloric from the body as to injure them. In such cases, the sheet is to be applied so as to extend only from the arm-pits or at most, from

the neck to the hips, leaving the lower extremities, as it were, in the dry pack. Sometimes the sheet is allowed to extend to the ankles, not including the feet. Packing the trunk of the body in wet towels, acts upon the same principle as the partial or half pack, and is, in many cases a valuable preliminary measure. It is well to take these preparatory steps when a patient who has suffered long from chronic disease, is beginning with the envelopment.

The Folded Wet Sheet.

In domestic practice, a modification of the wet sheet may be had by folding four-double a common coarse sheet, for enclosing the trunk from the armpits down. Two thicknesses of this are wet in cold water, to come next the body.

This is a valuable application in a host of ailments, as pleurisy, inflammation of the lungs, inflammation of the bowels, colic, cholera, cholera morbus, rheumatism, painful menstruation, after pains, etc. This remedy, which can be applied in five minutes, will often soothe a patient quietly to sleep, whose lot, without it, would be a night of agony. One advantage of this application is, that if a patient is too weak to rise, the sheet may be opened in front, so that fresh water may, when needed, be sprinkled upon it, and wet towels may be added under it, upon the abdomen, if necessary.

In all the methods of applying the wet sheet, there can be no possible objection to using warm bricks, bottles, etc., for the feet when cold.

Bath after the Pack. — It is the practice generally to take some form of the bath after the pack. If the patient is too feeble to rise, an ablution is performed while he is in bed. In other cases, a wet-sheet rubbing, shallow, plunge, towel, or other bath is resorted to, but not strictly of necessity. It is better, however, as a rule, to make the process a compound one, that is, to take some form of bath after the pack. This should also be followed by exercise in the open air, if it can possibly be taken. A pack, followed by a faithful turn at work, or by exercise in the open air, is always worth much more than when followed by rest within doors.

The Rubbing Wet Sheet.

The rubbing wet sheet, too little appreciated, and too seldom used is one of the most valuable of all the hydropathic resources. There is probably no other single application of water, in all the multiform modes of hydropathic medication, that can be made, on the whole, as useful as this. It is a tonic, a stimulant, a sedative, an antispasmodic, a derivative, or a febrifuge, according to the circumstances under which it is applied.

We take a coarse linen sheet, — although cotton answers a very good purpose, — large enough to throw around the body like an Indian's blanket. It is wrung more or less, according to the demands

of the case. Thereupon, it is thrown quickly around the patient's body, who, if strong enough, is in the standing posture; and then, both patient and assistant set vigorously to work, rubbing *over* the sheet, not *with* it, as some do, three, four, or more minutes, until the surface becomes thoroughly warm (Fig. 179).

Fig. 179.

If there is fever, less friction is required. After the *wet* sheet, comes a *dry* one, to be used in the same manner. Those who have sufficient reactive energy,—and most have,—may dry the body simply by fanning it with the dry sheet, the windows at the same time being open. This sort of air-bath exerts a highly pleasurable effect upon the skin. Instead of giving one a cold, it helps greatly to ward it off. This method of drying the body was one of Priessnitz's later improvements.

The rubbing wet sheet, it should be remembered, is not a *single* application, capable of producing only one effect. It is used in *three* different gradations, and to produce very different results. It is well wrung, or only moderately wrung, or left quite wet and dripping. If a person is fatigued, or has a low degree of reactive energy, the first form is the one to adopt; if there is not much fatigue, and good reactive energy, the second; and if the patient is feverish, and the object is to abstract heat simply, we use the sheet quite wet and dripping; and we repeat it as many times in succession as the case may need. One great advantage is, that we give it before or after a wet pack, when no bath is at hand; we also give it in connection with any other bath we may choose.

See how admirable a remedy the rubbing wet sheet is, when properly understood! A patient,—a child, perhaps,—is so feeble in the reactive power, that almost any form of bath we can give it sends the blood from the surface, making the lips and nails pale or blue, and the extremities cold, showing congestion of the internal organs. When a bath produces such effects, it is very apt, to say the least, to do more harm than good. But we can apply the rubbing wet sheet in such a way as to cause none of these ill effects; besides, it may be repeated many times in the day, so as to give the patient the advantage of a strong treatment; for a *light* treatment, which can be easily borne, is made a *strong* one by the frequency of its repetition.

A wet sheet, well wrung, holds perhaps a pint of water; or, at most, a quart. Now, it must appear plain, that a pint or quart of cold water, spread over so large a surface as the whole skin, must become very easily warmed by the body's heat. Besides, if there is *great* delicacy of constitution, we may wring the sheet out of water at seventy, eighty, or even ninety degrees, gradually lowering it as the patient can bear it.

The *domestic availability* of this application is also to be spoken of. In every dwelling, however humble, there is the coarse sheet, and the

bucket of water. How useful, therefore, as a resort, in home practice!

The rubbing wet sheet appears a trifling application, — one which is not capable of producing any great result. But when we remember the myriads of nerves of animal life, spread over the skin, and derived from the brain and spinal cord, it need not surprize us that its application should so invigorate the body, take off bodily and mental depression, remove languor and fatigue, expel flatus from the bowels, remove thirst, give appetite, and cause a feeling of calmness and relief which can be appreciated only by those who experience it. A minister, for example, preaches three times on a Sunday, and gets his brain so excited that he cannot sleep. A cold bath would be too powerful, and opiates would only act as stimulants, making the matter worse. Two or three successful applications of the rubbing wet sheet, with powerful friction, bring the blood so much to the surface, that his brain becomes relieved, and he very soon falls into a sound and refreshing sleep. So, too, when a man has been long wet and drenched on a rainy day, and comes home, with the surface and extremities cold, and the blood pressing hard upon the brain and other internal organs, — the well-wrung rubbing sheet is applied, with plentiful friction, and at once the oppressed organs are set free.

In using the rubbing wet sheet, as in all other forms of general bath, it is well to wash the hands and face in cold water, both before and after it. There is no need of throwing it over the head, as some have thought it necessary to do. A patient needs to breathe freely when he takes a bath.

This application is not always the most pleasant one. It does, in fact, require a good degree of moral courage to enable one to endure the first shock. The sensations produced by it are worse, if possible, than those from a plunge into cold water; I mean the first touch of the sheet to the body. Nervous ladies sometimes tell us they cannot take the rubbing wet sheet, when, at the same time, they take the cold plunge, which is far more powerful, and perhaps too powerful for their case. This unpleasant feeling does no harm, for it vanishes in a moment or two after the sheet touches the body.

The Douche Bath.

This is the most powerful, but not the most useful, of all the hydropathic appliances. A common douche consists of a stream of water from one to two inches in diameter, with a fall of ten, fifteen, or twenty feet. But douches may be arranged of any desirable size and height. (Fig. 180.)

This remedy is useful in paralysis, stiff joints, gout, rheumatism, tumors, and old swellings of various kinds. Those who have weak lungs, stomach, or other abdominal organs, should not resort to the douche without the best of medical advice.

The Shower Bath.

This is also one of the more powerful of the hydropathic appliances, and needs judgment in its use. It consists, in fact, of a vast number of small streams or douches, and hence is a powerful refrigerant, as well as excitant, to the system. It is useful to commence this bath, for a time at first, only upon the limbs.

The Cataract Bath.

This also is one of the more powerful of the hydropathic processes, and is to be classed with the two preceding baths. Like them it may be said to be stimulant, tonic, and alterative, while it is also highly sedative as far as animal heat is concerned.

The Hose Bath.

Through the modern improvements in India-rubber, gutta percha, leather, etc., it is easy, whenever there is a small fall or head of water, to arrange what is called a hose-bath. It is in principle a douche, with the additional advantage that it can be made to act upon any part of the body, and from whatever direction we choose. Rightly applied, the hose bath is a valuable remedy. (Fig. 181.)

Fig. 180.

Fig. 181.

The Pail Douche.

The process which passes under this name is taken thus: The patient seats himself in an empty, shallow, or other bathing tub, and crosses his hands over his chest. As many pails of water as are ordered are then dashed over him suddenly, one after another, before and behind alternately, — not poured, but thrown with some force, by first a backward and then a forward motion of the pail.

A better method of using it is, for the patient to stand in an empty

bathing tub, while an assistant takes two pails of water, one ten degrees warmer than the other, and empties the warmer half upon the chest and half upon the back, and then bestows the colder pailful in the same manner; then dries with friction.

The Wave or Sluice Bath.

This is taken at the sluice-way of an undershot mill-wheel, or in any similar place. The patient takes hold of a rope, or something by which he can maintain his position, and then, lying down, subjects his body to the action of the water. This is, on the whole, a pleasant and agreeable bath, and in its effects somewhat resembles the douche, being, however, milder and safer.

The Half Bath.

This bath may be used as one of the mildest of the water-cure processes, or as one of the most powerful. An ordinary bathing tub is a very good apparatus for the purpose. A good sized washing tub will answer very well, if there is nothing else at hand. The water should generally be quite shallow in this bath, — from three to six inches. Priessnitz's half-baths were made of wood, four or five feet long, about two and a half feet wide, and twenty inches deep. This simple contrivance is one of his most powerful remedial means, — that by which some of his highest triumphs are achieved.

The water is generally used of moderate temperature, at sixty to seventy degrees Fahr., and, when long continued, is changed, as it becomes warm from the heat of the body.

This bath may be used,

First, as a means of cooling the mass of the circulation in the hot stages of fever, and in inflammatory attacks of every kind;

Secondly, as a revulsive, or means of drawing blood in congestions or inflammations of the nobler organs, the brain, lungs, stomach, liver, etc.

Thirdly, as a means of resuscitation in the shock of serious accidents, sun-stroke, and before, during, or after apoplectic and other fits. In drunkenness and delirium tremens, the half bath is a sovereign remedy;

Fourthly, as a middle means, and preparatory to the general bath in weak constitutions.

In the latter of these indications, the bath is generally used but for a few minutes after the wet sheet, or at other times, as may be desired. In the former, much practical knowledge is necessary in order to proceed always with safety, and to obtain the best results. Thus, six, or even nine hours may be required, with the greatest perseverance, the patient being thoroughly rubbed over the whole surface, and this to be kept up constantly by relays of assistants, the patient's head and shoulders, meanwhile, being supported.

The Plunge Bath.

In sea, river, and lake, as well as by artificial means, and as a matter of luxury, religious observance, purification, and the prevention and cure of disease, the plunge bath has, in all periods of time, and in all parts of the world, been a favorite resort. So efficacious, indeed, has this simple means proved in healing the sick, that not a little superstition has been mingled with it. Springs and wells have often been supposed to possess some mysterious power, and for that reason been named after some patron saint. In this respect, the world has loved mystery and marvellousness rather than the pure and simple truth.

In hydropathic practice, the plunge is much used; but many patients are not able to bear it. Those who are not sufficiently strong for it at first, should practise the rubbing wet sheet, the half-bath, drinking, exercise, etc., until the plunge can be borne. It is a favorite remedy at all the establishments, to be taken directly on coming from the wet sheet pack.

The Head Bath.

From time immemorial, cooling applications to the head have been much depended upon in that violent and dangerous disease, inflammation of the brain. All other known means failing, certain obstinate affections of the head have been known to give way to affusion of cold water upon the part. In headache, drunkenness, delirium tremens, the delirium of fever, epilepsy, rheumatism of the head, diseases of the eye, earache, deafness, loss of smell and taste, and in nose-bleed, this highly energetic remedy is brought to bear. In taking it, the patient lies down, placing the back of his head in a shallow dish, filled only an inch or two with water. (Fig. 182.)

Fig. 182.

Fig. 183.

The Leg Bath.

This is useful in cases of ulcers, swellings, eruptions, gout, rheumatism, sprains, wounds, etc., of the leg or thigh. The relief and

strength obtained, often by a single application of this remedy, is truly wonderful. A variety of apparatus may be contrived for administering the leg bath. A common wooden tub, contrived for the purpose, like that represented in Fig. 183, answers a good purpose. In such a vessel, he covers the inflamed limb introduced, and cools the blood flowing to it.

The Sitz-Bath.

Convenient tubs, wooden or metallic, are constructed for this bath; but an ordinary wash-tub answers very well. The vessel should be large enough to permit the motion of the arms in rubbing the abdomen, sides, and hips, first with one hand, and then with the other Water enough should generally be used to pretty nearly cover the belly. The more movement and friction while in this bath, the better. It is more conveniently administered when the tub is elevated two or three inches from the floor. Some undress the patient completely, and place a blanket or sheet over the upper part of the body; but oftener, only those parts are uncovered which are to be exposed to the water. (Fig. 184.)

In a variety of ailments, this bath is highly valuable. It may be made one of the most powerful of all the hydropathic modes. Like all other powerful applications, it should be taken only when digestion is nearly or quite completed.

As a tonic to the stomach, liver, bowels, womb, spine, etc., this bath is highly useful. In constipation, and other irregularities, it is famous. Those of sedentary habits will find its use of rare service. For the tonic effect, ten, twenty, twenty-five, or thirty minutes. If continued for some length of time, the water is to be changed once or more, as it would otherwise become too warm.

Fig. 184.

Fig. 185.

The Wash-Tub Bath.

Under a great variety of circumstances, the wash-tub bath is an invaluable remedy. For example, a patient is feverish; by setting

him in a wash-tub half filled with water, and, at the same time, if we choose, putting his feet in a pail of water, cold or warm, according to the case, we may give him any desirable amount of cooling. We cannot, indeed, too highly prize this simple contrivance for using water, — a means which every family possesses. (Fig. 185.)

The water, as a general rule, should be tepid, ranging from 72° to 90°, and may be prolonged from two to fifteen minutes, according to the strength of the patient. It should never be carried to the extent of producing blueness of the nails. The patient should be dried with towels, or the dry rubbing sheet.

This bath is useful in the treatment of eruptive fevers, bilious remittents, the hot stage of intermittents, and in hectic and typhoid fevers. It is often used after the wet sheet pack, in chronic affections, and may then have a little cooler temperature, or else be followed by pouring a pail of cooler water over the shoulders, to tone up the skin.

The Affusion.

The patient stands in a wash-tub, bathing-tub, or other convenient place, when, by means of a pail, pitcher, or basin, the assistant pours water upon the head, neck, etc., either upon the whole of the body or only upon a part. The water is used in quantity and temperature according to the necessities of the case. The affusion is one of the best of hydropathic modes.

Fifty years ago, Dr. Currie, of England, performed great cures in fever by the affusion, sometimes tepid, at others cold, according to the strength and heat of the patient. If there was great heat, the water was used cold; if not, the reverse. In a variety of febrile diseases, such as typhus fever, scarlet fever, small-pox, measles, tetanus, convulsions, etc., he used this remedy with remarkable success.

Towel and Sponge Bath.

With one or two coarse towels and a quart or two of water we may take a very good bath almost anywhere, even in a carpeted room, at a hotel, or wherever we may be, without spilling a drop of the water. After a person becomes accustomed to this form of ablution, none but the most indolent will be willing to do without it, unless they can have some other form of bath. A daily towel ablution, thoroughly performed, is an excellent prevention against colds, helps the appetite and digestion, and is a good means of preventing constipation.

Some are in the habit of sitting in a half-bath or a sitz-tub, and with a large sponge making the water pass freely upon the head, neck, shoulders, and other parts of the body. At the same time, the bather may pour water from a cup, basin, or pitcher, upon the head, neck, etc. This is a mild affusion, and stronger in effect than the towel-bath.

Wash-Down.

The process to which this name is given by Dr. Edward Johnson, is practised as follows: "The patient stands in an empty sitting or wash tub, beside which stands a pail of cold water with two coarse towels soaking in it. The bath attendant, taking his place behind the patient, lifts one of the towels, all loaded with water, and lays it quickly on the patient's head. The patient immediately seizes it, removes it from his head, and rubs himself rapidly with it,—his face, his throat, shoulders, arms, chest, stomach, bowels, thighs, and legs. Having gone rapidly over the whole body once, he drops his towel into the pail again, which the bath-man presses down to the bottom of the water, then lifts it out, and places it on his head again. As before, the patient seizes it, and goes all over the same ground once more, and then drops it into the water again, when the bath-man again lifts it and places it on the head to be a third time removed by the patient, and applied as before, rapidly, actively, and energetically, all over his body in front. The bath-man is industriously occupied all the time behind in the same manner, from the back of the neck to the back of the legs, wetting his own towel as often as he wets that used by the patient, viz., three times. This is called a wash-down of three towels. The patient is then dried in a dry sheet. It is a more powerful bath than the common towel-bath, but not in all respects so convenient to take.

The Cold Foot-Bath.

One of the first things people who are troubled with cold feet do, is to plunge them into cold water. Nor is the assertion, put forth in some of the hydropathic works, that the cold foot-bath was prescribed by Priessnitz for the same purpose that the faculty order warm ones, correct. When the feet are already cold, neither Priessnitz nor any one in his sober reason would prescribe cold water, which can only make the parts colder. To obtain the good effect of the cold foot-bath, so far as the feet are concerned, they should be warm whenever it is taken. For a tendency to coldness of the feet,—a very common symptom in these days of so-called luxury and refinement, and one that indicates a state of things in the system incomparably more to be dreaded than the mere coldness of the feet,—this is *the* remedy. It may be taken at any convenient time; just before the morning walk is a very suitable occasion, the parts being usually warm early in the day.

At other times, if cold, they should, if at all practicable, be warmed by exercise and friction, before subjecting them to the action of cold water. But in cases of old age, great debility, etc., the warm foot-bath, and other warm applications may be resorted to before the cold. Thus with cold, exercise, and friction, accustoming the feet daily and frequently to cold water, will beget in them a habit of remaining warm. In a great variety of ailments, such as toothache, rush of

blood to the head, headache, earache, inflammation of the eyes, gout, rheumatism, hemorrhages, etc., the cold foot-bath is a valuable remedy. It is ordered deep or shallow, and of duration according to the nature of the case.

Wading Foot-Baths.

I HAVE often directed patients to wade in water in some convenient place, as a means of hardening the system and of giving tone to the nerves. Delicate ladies who were not able, as they supposed, to endure cold water applied to the feet, have by degrees, wetting the feet but little at first, become so accustomed to the coldest water, that in a few weeks they could bear as much as any one would desire. Caution and perseverance should be the rule.

It is partly by sympathy and partly by the abstraction of heat, that foot-baths and wetting the feet act in so beneficial or deleterious a manner as we know them to do. The principle of sympathy is an old one in the medical art, but none the worse for that.

The Warm Foot-Bath.—*Pediluvium.*

I AM aware that some who consider themselves *genuinely hydropathic*, object to the use of this remedy. Having truth for my object, however, I care not for such objections so far as myself am concerned, and without stopping here to argue the question, I simply remark that *warmth* under some circumstances is as natural an application for the living body, as *cold* under other circumstances. I have already remarked, under the head of the cold foot-bath, that putting the feet into warm water is often a good preparatory process to that bath. It is good also, now and then, for soothing divers aches and pains, and also for warming the feet of old and weakly people, who cannot exercise sufficiently.

The Nose-Bath.

IN a variety of nasal ailments, catarrh, colds in the head, inflammation and ulceration of the nasal passages, nose-bleed, etc., the *nose-bath* is a salutary remedy. The water is used either tepid or cold, according to the case. It should be drawn back if possible, so that it is ejected by the mouth. Those who have injured the nasal cavities by much snuff-taking, will find advantage from sniffing water freely into the nostrils. If one is determined to leave off snuff, as every one addicted to it, if he regards either health or bodily comfort, ought, he will find it useful often to take cold water, instead of the abominable weed.

The Eye and Ear Bath.

VARIOUS contrivances may be brought to bear in applying water to the eye and ear. Light, ascending douches and showers are useful in

various diseases of the parts. There should not be much force used in this way. Immersing them also in water is often useful. The water should not, in general, be very cold, tepid or warm being often the best.

Mouth, or Oral Bath.

For inflammation of the gums, mouth, throat, and palate, in slimy secretions from the throat and stomach, in toothache, catarrh, colds, and chronic hoarseness, garglings and baths for the mouth are of great service. Pauley, a merchant of Vienna, has been thought singular for his zeal in recommending this bath. Clergymen and others who suffer hoarseness by much speaking, will find that holding very cold water in the mouth until it begins to grow warm, and then ejecting it, and by frequently repeating the process, much benefit will be obtained. Coughs and tightness of the chest may often be essentially relieved by this bath. In mucous secretions from the throat and stomach, by ejecting the water a number of times, it will surprise those who have not witnessed the remedy to see the amount of slimy secretion thrown off.

Division of Baths.

On no one subject connected with hydropathy has there been more "confusion of tongues," than concerning the temperature of baths. Both in books and in popular language, among physicians as well as laymen, have words been used, sometimes confusedly, and at other times without any meaning whatever. Orthodox medical works, as well as the *un*orthodox, come under the same category of error. A few simple explanations on this head, properly made, will be sufficient for all practical as well as scientific purposes.

The simplest and most natural division of baths is into *cold*, *tepid*, *warm*, and *hot*. These are all terms of every-day life, and are fully sufficient to guide us in the selection of any and all the multiform uses of water which hydropathy teaches. I admit, however, that when we wish to be especially explicit, the actual thermometrical temperature should be mentioned. *Hot* baths, I maintain, have no proper place in hydropathic practice. He who resorts to them either does not at all understand the true principles of the Water-Cure, or is guided merely by the whims or caprices of those who employ him.

But whatever words we use to designate the different baths, there is one objection, which is, that all such terms are necessarily arbitrary in a greater or less degree. What appears to one person cold, may to another appear tepid, or warm, or even hot. Thus it is said that on a road over the Andes, at about half way between the foot and the summit, there is a cottage in which the ascending and descending travellers meet. The former, who have just quitted the sultry valleys at the base, are so relaxed, that the sudden diminution of temperature produces in them a feeling of intense cold; while the latter, who left

the frozen summit of the mountain, are overcome by distressing sensations of extreme heat. If on a cold winter's morning we go from a warm bed to a bath of sixty to seventy degrees Fahr., the water appears cold. If we then plunge immediately into water which is at about the freezing point, and then return again to the water at sixty to seventy degrees Fahr., it appears warm. When the temperature of the atmosphere is at fifty-five degrees Fahr., in November or October, in this latitude, and the body of a comfortable degree of warmth, and we take three basins of water at sixty, seventy, and eighty degrees Fahr., placing one hand in the water at sixty degrees, the other in that at eighty degrees, letting them remain thirty seconds in each, and then immerse them both in the water at seventy degrees, it appears to one *cold*, to the other *warm*.

But we can arrive at rules which approximate so nearly to the actual truth, that they will serve us, as before remarked, for guides in all practical and scientific purposes.

The Cold-Bath. — With a majority of persons, and at most seasons of the year, water at from seventy to eighty degrees Fahr. downward, gives, when immersed in it, a sensation of coldness. The spring water of all countries furnishes what may therefore be called a cold-bath, although there will be a range of many degrees variation in what we term cold.

The Tepid-Bath. — The word *tepid* is from the Latin *tepeo*, to be *warm*. The true English meaning of the term however is, according to Mr. Webster, *moderately warm*, or *lukewarm;* in other words, water which, when a person is immersed in it, gives a kind of indefinable sensation, one which, coming properly under the neither *cold* nor *warm*, is said to be *tepid*. This temperature will be found to range at from eighty to ninety-two degrees Fahr.

The Warm-Bath. — The term *warm* is generally well understood. It means that temperature of water which is peculiarly agreeable to the sensations. Fresh-drawn milk or blood we say are warm. The temperature of water which will cause this sensation, varies from ninety-two to ninety-eight degrees Fahr.

The Vapor-Bath. — The temperature of the vapor of simple water varies from about ninety degrees Fahr. upward, according to the heat of the water, and the space through which the vapor passes.

The Hot-Bath. — The term *hot* is also expressive of its proper meaning. If the body is immersed in water above blood-heat, it causes an uncomfortable sensation, which we designate as *hot*. Hot water is a disturber of the vital functions, particularly if the whole body is immersed in it. Hot-baths, therefore, should be used, if ever, only in a most urgent necessity. Hot water, in no form whatever, entered into any part of Priessnitz's treatment.

Having thus explained the temperatures of the different divisions of the bath, it is proper to state them in a tabular form, the better to aid the memory. They are as follows:

Cold-bath from freezing point,	32 to 85° F.
Tepid "	80 to 92°
Warm "	92 to 98°
Vapor "	90° and upward.
Hot "	above 98°

I now propose to explain somewhat minutely, and at the same time with a due regard to the needs of the non-professional reader, the physiological effects of each of the several kinds of bath, and I here respectfully premise that any one who attempts to practise the water treatment without having in his mind clear notions upon this subject is, to say the least, as much a "groper in the dark" as he who attempts the practice of drugs of which he knows nothing, upon the living body of which he knows less. How can a man be trusted in water treatment if he cannot tell beforehand what effect a bath is to have; and this he cannot, if he does not fully understand the meaning of the terms which I have here explained.

Effects of the Cold-Bath. — The effects of the cold-bath are properly spoken of under two heads, the *primary* and the *secondary*. The terms are sufficiently expressive of their meaning. The first are those which take place at the time of the immersion; the second, those that occur later, constituting what we understand by the term *reaction*.

Immediately on immersion in cold water, the bather experiences some acceleration of respiration and the heart's action, although the pulse becomes at the same time smaller and weaker. Very soon, however, the *panting*, if I may so call it, passes off; the temperature of the body is found diminished, the surface paler than natural, the skin taking on that form of appearance known as "goose-flesh."

The first effect of cold water applied to the body, generally, is to abstract a certain amount of heat from the surface, to constringe the capillary vessels, and to force the blood inward. Now, as the living body possesses the remarkable property of maintaining its temperature at very nearly the same point, whether it is in a colder or hotter medium than itself, the vitals at once set to work in restoring the caloric abstracted by the contact of the water; and as the functions of circulation and calorification go necessarily together, the vital power, acting through the heart and blood-vessels, attempts a return of the blood that had been forced inward by the coldness of the water.

This is what we call reaction. If the individual is sufficiently strong and well stocked with vitality, the blood is quickly returned to the surface and to the extremities (which are always most liable to become cold, being farthest from the heart), constituting what is termed *good*, or *vigorous* reaction. But if the surface and extremities continue to remain unwarmed by this return of the blood to them, as happens in the case of feeble persons, there is said to be *poor*, or *insufficient* reaction.

Effects of the Tepid-Bath. — The tepid-bath, which we have seen ranges from eighty to ninety-two degrees Fahr., produces effects anal-

ogous to those of the cold-bath, only not so lasting and permanent. It is especially useful in the treatment of infants and children, and in all cases where the reactive energy is feeble. If in any case we are in doubt as to whether the cold bath is admissible, the tepid form will be a milder measure, and at the same time serve as a test in venturing upon the cold. The tepid bath may be continued longer at a time, which in some cases will be found an advantage.

Effects of the Warm-Bath. — There is among hydropathic physicians, if I am not mistaken, too great a fear of warm applications on the part of some, while others go to the opposite extreme. Mark, I speak of *warm* applications. *Hot*, as before remarked, have no proper place in hydropathy, — a rule to which the exceptions are few.

The warm-bath, as before remarked, ranges from ninety-two to ninety-eight degrees Fahr. It is not the *most* useful of the hydropathic resources, but *one* of the most useful, as I shall endeavor hereafter to show.

Among the ancient Romans the warm-bath was not considered as a means of luxurious indulgence that tended to weaken the vital powers, but a means of refreshment for the wearied traveller, and of preparing him for the repast and the enjoyment of other rites of hospitality. The effect of the warm-bath is not one of debility, as many suppose, but, on the contrary, it is a sedative, lowering the heart's action and the circulation, and tending to repose rather than excitement.

Effects of the Hot-Bath. — The hot-bath, before remarked, is one which is above the temperature of the blood, ninety-eight degrees Fahr. It was laid down as a precept by Hippocrates, that a bath enfeebles when the heat exceeds that of the body immersed in it. The truth of this precept has often been verified in practice.

I do not wish to be understood as affirming that hot applications can never be made with benefit to the body; on the contrary, heat applied to a part locally may be of service, although I am inclined to believe that even in those cases where heat acts in a beneficial way, some other form of hydropathic appliance can be used more beneficially. I make, it will be remembered, a broad distinction between the terms *hot* and *warm*.

Sea-Bathing.

As regards temperature, sea-bathing comes under the general head of cold-baths. Sea water, however, at those seasons of the year when sea-bathing is resorted to, is of but a moderate degree of coldness, varying in this latitude not much from seventy degrees Fahr.

In order to appreciate fully the effects of sea-bathing upon the system, a number of things are to be considered.

Sea water differs in its effects from common water by its possessing greater density. This circumstance, however, is not of so great importance as that of the stimulating nature of the mineral it contains. The saline ingredient is a powerful stimulant and even irritant of the skin. On account of this property, it is found that an exposure to the

action of salt-water is not so liable to cause ill effects as that to fresh. The salt causing a degree of heat upon the surface somewhat higher than that of the natural state, the system is for the time shielded from the action of cold. It does not follow from this, however, that a person could live longer immersed in sea than in common water, any more than it follows that because alcohol for a time increases the animal temperature, life can, under circumstances of great exposure to cold, be the longer preserved. This it is now well known is not the case.

An advantage of sea-bathing in the hot season is, that the air at the sea-shore is cooler than on land. That our climate in summer is too hot for the most favorable development of health is proved by the great increase of mortality, not only in our cities, but in other parts, during the hot season. The European cities, with all their numbers of inhabitants, dampness, narrow streets, intemperance, pauperism, etc., would naturally be expected to show a higher range of mortality than our American cities, but such is not the fact. Even New York, with all its natural advantages, is as sickly, probably, as any of the British or European cities. This, it is agreed on all hands, must be owing in great part to the great heat of our summer months.

The manner of taking the salt-water bath has some peculiarities which are favorable to health. It is, in the first place, in the open air, which, if the weather is favorable, that is, neither too hot nor cold, is always a great advantage. Other things being equal, a bath in the open air is always attended with a better reaction and a greater degree of invigoration than one within doors.

In the second place, sea-bathing is usually and almost necessarily connected with exercise both before and after the bath, circumstances which are always highly favorable to the action of cold water. So beneficial, indeed, is exercise taken in this way, that it would be difficult to determine which of the two — the exercise or the bathing — is the more beneficial. In connection, the two act reciprocally upon each other, each rendering the other doubly beneficial.

Injections.

The term *injection* implies the act of throwing a fluid into some cavity of the body.

In Water-Cure we inject water more frequently into the bowels than any other cavity. This kind of injection is also called *enema*, or *clyster*.

Most people have so little confidence in simple water, that if a clyster is administered to them, they have no idea that it can operate in so effectual a way as it usually does. Years ago, when the water treatment was much less known than at the present time, I have been suspected of having secretly put some cathartic substance in the water, "for," said the patients, "how is it possible for *water* to act in this way?"

A great variety of injection-instruments have been invented. Some

of these are very convenient and useful; others are got up on mere speculation, and are but little worth. Every family, at least, ought to have a good force-pump injection-instrument, if they can obtain such a one. A lady's toilet is never complete without it. A good article is either manufactured or sold by most surgical-instrument makers, and druggists often have a good article. *But beware of imposition.* It is better to get along with a common bladder and goose-quill, as we may in an emergency, than to pay for a good-for-nothing syringe.

Modus Operandi of Water.

It is often objected to hydropathy that water, being but one agent, cannot be made useful in all diseases. I propose here to make some remarks on *the modus operandi of water*, in which I shall endeavor to explain, not only to the scientific scholar, but to the ordinary reader, that water is capable of being made available as a remedy, — and that powerfully too, — in a great variety of ways. It then acts:

1. **By its Presence.** — Water, as we have seen elsewhere, composes the larger part of the living body, and that without its presence in a large proportion in the living system, the vital processes cannot for a moment go on.

2. **By its Coldness.** — Cold, within proper limits, preserves and augments life, while heat tends to debility and decay. In proportion as the animal heat is diminished in the different classes of animals, the less is the want of air felt. If in a puppy the eighth pair of nerves be divided, producing a closure of the glottis so that no air can enter its lungs, the animal dies in half an hour, if kept at an ordinary temperature. But if the animal is benumbed with cold it survives the operation for a whole day. Frogs, in the summer, when the temperature of water is elevated, are obliged to come often to the surface for air. But in winter, when the water is colder, they live almost entirely under its surface. A cholera patient in collapse, a person who has been stifled by foul gases, one in the sinking stage of a fever, or fainting from loss of blood, or in any way asphyxiated, desires always coldness rather than heat. It may not be possible in the present state of science to explain these phenomena; but undeniably we have the facts.

3. **By Endosmose and Exosmose.** — Animal membranes have the power of *absorbing* liquids, — called *endosmose*, or *imbibition*, and of throwing them out, *exosmose*, or *transudation*.

If we take a portion of the intestine of a chicken, tie one end, nearly fill it with milk, then tie the other end, and lastly immerse it in a tumbler or other vessel of pure water, we find that in a short time the milk passes out of the intestine into the water, and the water inwardly mingling with the milk. This process goes on till the fluid within and without the intestine becomes one and the same. This is a familiar illustration of the principle in question.

4. **By Dilution.** — Water is the greatest diluent in nature. There is no substance which is at all comparable to it for penetrating the myriads upon myriads of capillaries that exist in all parts of the living structure. When the fluids become thick, viscid, and filled with impure matters, as is usually the case to a greater or less extent, in disease, it is an important object to dilute these matters. For this purpose water is the only available remedy.

5. **By its Tonic Effect.** — Water is the greatest of all tonics, and possesses the valuable property, not of wearing out, but of increasing in its good effects.

6. **By its Excitant or Electrical Power.** — A man feels dull and stupid from excessive bodily or mental labor, from excessive alimentation, or spirit, or tea and coffee-drinking, with the blood all crowding up into his head. We apply the well-wrung rubbing wet sheet one, two, or three times, to his surface, according as he may need, and he at once perceives a most wonderful change for the better. Or a man feels of a morning dull and stupid, with his muscles sore; he has the rubbing wet sheet, the plunge, shower, or douche, and instantly his troubles banish. Or he may have a lumbar abscess, which has run him down so low that when he wakes in the morning he finds he cannot walk. Two or three gallons of cold water are poured over him, upon which he walks readily. Now these effects of water, remarkable as they are, arise simply from its excitant or electrical power.

7. **By its Temperature.** — In acute disease, in all fevers and inflammations, of whatever name or grade, the great power of water to regulate the temperature of the body is one of the most striking of all the phenomena cognizable by man. By the use of cold water we can always vary the heat of the body and the velocity of the heart's action to any desirable extent.

8. **By Purifying the Blood.** — Water accomplishes one thing which no drug, no other substance in nature can. *It purifies the blood.* It does this because it penetrates every lane and alley of the system, however minute. No capillary is so delicate that it does not penetrate its smallest possible part. It purifies the blood, because as long as the vital principle lasts, the tendency of nature is to preserve the vital fluid in a healthy state; and penetrating every tissue of the body as water does, it assists nature in the purifying process as no other substance can.

9. **By Augmenting the Vital Force.** — No fact in science is better established than that water possesses the power of actually increasing the amount of vitality in the system. This is, in fact, the prime effect of water. It aids the system in throwing off disease in the same way that increasing a merchant's capital aids him in throwing off debt.

The foregoing propositions are submitted as elucidating some of the leading principles concerned in the action of water upon the liv-

ing body. I do not claim, however, that the whole of the philosophy of the effects of water is yet understood by any one. Doubtless those who know most about it have yet much to learn.

Rules for Using Water.

The Time of Day. — In general, the more powerful applications should be made in the early part of the day. At this time the calorific powers and the circulation are more vigorous, and, consequently, the body more able to resist powerful applications of whatever kind.

The Meals. — Ordinarily, no powerful bath should be taken within three to four hours after a meal. A full stomach and cold water do not at all agree. But in certain diseased conditions, as feverishness, inflammation, colic, cramp in the stomach, cholera morbus, and other sudden attacks, water appliances are to be commenced without reference to hours or meals. The symptoms then are our only guide.

The Lighter Baths. — If there is doubt as to which application to make, the well-wrung rubbing wet sheet, the tepid shallow-bath, or a warm-bath should first be taken.

Reaction. — Within a reasonable time after a bath, the body in all its parts should become naturally warm. If the feet and hands remain cold, and the nails and lips blue, the bath has, to say the least, done no good. In some cases of fevers and other inflammatory diseases, it is better to keep the body chilly than to allow it to become too warm.

Ulceration. — If any part of the body, as the extremities, lungs, bowels, etc., is undergoing any considerable ulceration, very cold baths are inadmissible.

Nervousness. — With some persons who are highly nervous, and particularly with nervous females, much cold bathing, although it appears to agree well, and to be the best for a time, is in the end harmful, rendering the nervousness and general debility worse.

Exercise. — For the douche, plunge, cold sitz, and foot baths, and all others that abstract a large amount of caloric from the system, the body should be fully warm, and the circulation somewhat accelerated by exercise. Exercise should also be taken AFTER the bath, until the heat and circulation are fully restored. But if exercise is impracticable either before or after the bath, friction should be made to take its place.

Increased Heat. — Elevation of temperature constitutes no objection to bathing, provided the body is not excessively fatigued. The reason why overheated persons sometimes lose their lives by plunging into or drinking largely of cold water, is, that the vital force has been too much exhausted. Mere heat is an advantage.

Perspiration. — Neither does this constitute an objection to bathing or water-drinking, if the foregoing rules are observed.

The Air. — Bathing in the open air is always preferable to in-doors, provided the extremes of heat and cold are avoided.

The Head. — It is well always to wet the head with cold water, both before and after a bath. Douches and the shower should never be taken on this part. Simple pouring or affusion is the only mechanical force of water that should be allowed on the head.

Pregnancy. — This, as abundant experience proves, forms no objection to bathing, or any form of properly regulated water treatment. Cold bathing and water-drinking are of the greatest service during this period.

The Season. — If the lungs are not extensively diseased, and if there is no considerable ulceration going on in any part of the system, the cool and cold seasons are preferable for a course of bathing. With right management, a patient gains two or three times as much in a given time during the cold months as he does in the hot.

Days of Rest. — One day in seven water treatment should be discontinued, with the exception of a simple ablution in the morning. Six days' treatment in the week is worth more than seven, because it is a law of nature that, if a remedy is continued steadily and without change, it loses much of its good effect. This is as true of water as of any other agent. Those who do wisely will omit the treatment on Sunday, whatever their religious convictions may be.

Internal Use of Water. — The same general rules apply here as in the external applications. *Thirst* should for the most part be gratified whenever it is experienced. As a rule, the less water drank at meals the better. For the *tonic* effect, it is to be taken while the stomach is empty, and it is better that exercise should accompany it. From six to twelve tumblers per diem is a fair allowance for average patients.

Quality of Water. — For all remedial as well as hygienic purposes water should be as pure and soft as can be obtained. With proper care and ingenuity in the construction of cisterns, filters, etc., this desirable end can be everywhere accomplished. Lead, and lead pipes, should be avoided, except where the water runs freely and constantly.

The Sweating Process. — Formerly it was much in vogue to sweat patients in the blanket pack, but latterly the practice has quite gone into disrepute. For several years of the latter part of Priessnitz's career he was very averse to using the process. It was a remark of his, that the cures by sweating were not permanent.

Wet Bandages and Compresses, etc.

These, as we have already seen under the head of wounds and injuries, are of great value in water treatment. They are used of any desirable size, upon any part of the body, and produce different effects accordingly as they are used. *Cooling* wet compresses are such as

are changed or rewet frequently, and for the most are left uncovered. The *warming* or *stimulating* are covered and left upon the part until it becomes as warm or warmer than natural. *Warm* fomentations are useful in certain cases, but the *hot* should, as a rule, be discarded.

The *wet girdle* is one of the most useful of all medical appliances. Two and a half or three yards of good toweling, with tapes arranged at one end, the corners of which have been turned over and sewed so as to form a point, forms a good girdle. It should pass usually three times about the body, one half having been wet. This brings two thicknesses of wet on the abdomen and one upon the back. At Graefenberg this appplication was worn by every patient, and, as a rule, all of the time. It is useful in a great variety of ailments, both acute and chronic. The same *form* of application is also useful for the arms, legs, etc., the tapes being used in preference to pins.

The *wet jacket*, or *chest wrapper*, is also a valuable resort in diseases of the chest. Oiled silk and other similar articles, as I have elsewhere observed, are not to be used upon these local applications.

DOMESTIC MANAGEMENT OF THE SICK-ROOM.*

Choice of the Sick-Room, etc.

Sleeping Apartment. — In every case of disease, however slight its nature, the sleeping apartment of the sick should be airy and well ventilated; but, when Providence visits any member of a family with disease of a serious and protracted description, all other considerations giving way to the necessity of the case, an apartment should be chosen and arranged in a special manner for the reception of the invalid. It should be one calculated to administer to his temporary comfort, as well as to aid his recovery. It is not time, when the alarm is sounded and the danger is already urgent, to think of such arrangements; forethought must be put in requisition; every want anticipated; and whatever is likely to be required should not only be provided, but so arranged that it can be instantly found when it is needed.

The sick-room should be large, lofty, and, if possible, with a northern aspect, in order to avoid the heat of the mid-day, or the afternoon sun; the windows should be capable of being opened by drawing down the uppermost sash; an advantage, however, which cannot always be obtained, as this mode of opening windows is too generally neglected in the construction of modern houses. No room, however large, should be used as a sick-room, unless it has a chimney; but neither the chimney-board nor the soot-board of the apartment should be put up, even in summer. No article of unnecessary furniture should be permitted to remain in the room; and that which is left in it should be of a description fitted to administer to the convenience of the invalid.

Two tables are sufficient. One of them may be small, to stand near the bed, for the immediate use of the patient: namely, to hold his jug of barley-water, or toast-water, or other beverage; — a small tea-pot, or, what is preferable, a half-covered cup with a spout, to enable fluids to be administered without raising the sufferer in bed; — his medicines for the day; — and any other thing which he may frequently require.

The other table should be large, for the accommodation of medicines not in immediate use, and also for spare glasses, jugs, cups,

* Thompson, On the Management of the Sick Room.

spoons, both large and small, and other necessary articles. This table should have one drawer, at least, which ought to be furnished with the following articles: broad and narrow tape; two or three half-worn ribbons; a bundle of old, soft linen; a sponge; a few ounces of lint; scissors, large and small; a bone spatula for spreading ointment; a couple of rolls of muslin, and the same quantity of flannel bandage two inches broad; a pin-cushion well supplied with pins; needles and thread; and about half a yard of simple adhesive plaster.

A Sofa or Reclining Chair. — A sofa, if the apartment be sufficiently large to admit of it, is a very important piece of furniture in the sick-room; the erect or the sitting posture being injurious in many diseases; and, when the sick-bed requires to be made, a sofa affords the means of removing the patient from the bed with as little inconvenience to him as possible.

If there is not space for a sofa, there should be an invalid or reclining chair; and, when circumstances will permit, it should be of that kind which is susceptible of a variety of changes, so as to vary, at pleasure, the position of the patient. There should not be more than two other chairs in the room. If there is a looking-glass in the apartment, in a situation which admits of the patient seeing himself in it as he lies in bed, its place should changed, or it should be altogether removed from the room. A chest of drawers is essential; but none of the drawers should be appropriated for the reception of dirty linen, which ought never to be allowed to remain a moment in the sick-room. One drawer should be specially allotted for towels, of which an ample supply is, in every case, necessary. The washing-stand will require two additional basins; an additional water bottle and a tumbler; and a large, supernumerary water jug, under the table, always full of water.

No Cooking in Sick-room. — There should be no kettle, nor any implement of cooking, in the sick-room; even in winter, and when a fire is required. In general, a fire in the sick-room is only necessary for the comfort of the attendants; but nurses too frequently take advantage of it to boil the water for their own tea, and to prepare the slops for the invalid; a custom which cannot be too severely reprobated. The lamp termed a *Night-nurse*, consisting of a water-bath placed over a lamp in a wire-worked cylinder; a small tin kettle which enters the top of the cylinder; and a covered earthen-ware vessel which fits it into the water-bath; are useful for keeping fluids warm, and at the same time for preserving a light in the room, when an unshaded lamp or a candle would be hurtful.

In continued fevers, the sense of hearing is often so morbidly acute, that ordinary sounds become causes of pain. In this case, if the floor of the sick-room be not wholly carpeted, every precaution to lessen the intensity of sound should be taken. One of the most effectual is to have a couple or more pairs of large list shoes outside the door, into which the feet, even of the doctors, may be advantageously thrust, when their shoes make a creaking noise, or when a visitor or nurse treads with a heavy foot. On the same account, when more

than one nurse or attendant is required to be in the room at the same time, no conversation, although it may be carried on in a whisper, should be permitted. Whispering, indeed, is apt to excite delirium, and to augment it when it is already present.

Beds and Bedding. — The French beds, without curtains, are those best adapted for the sick-room. When four-posted bedsteads, surrounded by curtains, were more in use than at the present time, the mischief arising from excluding the free air, by drawing the curtains close around the bed, was frequent and serious. In every case of disease, indeed, especially when it is attended by fever, the patient should be kept cool, and the most perfect freedom be given to the breathing; the mattress should be placed over the feather bed, and the pillows be firm and elastic. The Marseilles coverlets, which are spread upon beds during the day, and often retained at night, are heavy, and calculated rather to increase than to subdue fever; consequently they should be wholly discarded from the sick-bed. Indeed, when the disease is fever, and when it is accompanied with great restlessness owing to the evening exacerbation, if the bed-room be sufficiently large, two beds should be placed in it; or if two adjoining bed-chambers can be obtained, a bed ought to be put in each, so that the patient can be moved from one bed to the other every morning and evening. This both aids sleep, and it also tends greatly to insure the personal cleanliness of the patient. The bed-clothes of the bed from which the patient is moved, should, on his removal, be immediately turned down and fully exposed to the air; a precaution which will set aside the necessity of so frequent a change of linen, as would be, otherwise, required. When there is only one bed, and when the disease is fever (unless the patient is too ill to permit his being moved), the sheets which have been used at night should be replaced by others in the morning, and hung up in the free air during the day, to be again used at night. But, when it can conveniently be done, in every case of continued fever, especially of an infectious kind, the sheets should be changed once in twenty-four hours; a practice which is likely to prevent the fumes of infection from being communicated to the blankets or to any of the furniture of the room.

Ventilation is always of primary importance; and that period, happily, is gone by, in which air was carefully excluded from the chambers of the sick, even when they were suffering under febrile disease.

Ventilation is particularly demanded in those fevers in which miliary eruptions display themselves; under no circumstances is it so essential as in febrile diseases of an *infectious* kind. It may, however, be consolatory to those whose duty it is to attend such cases, to know that infection, communicated through the air, rarely extends above a few feet from the body of the patient; and even in the most malignant diseases, with the exception of confluent small pox, and malignant scarlet fever of the worst kind, its influence does not exceed a few yards, if the room be well-ventilated. On the contrary, if ventilation be neglected, the power of infection becomes greatly

augmented from its concentration in confined and quiescent air; it even settles upon the clothes of the attendants, and on the furniture of the room; and these imbibe it most readily when their texture is wool, fur, or cotton, or any loose or downy substance capable of receiving and readily retaining the air. Smooth and polished surfaces do not easily receive or retain infectious matter; consequently the nurses and attendants, in cases of infectious diseases, should have glazed gowns, and aprons of oiled silk.

In no infectious diseases are these rules more essentially necessary than in small pox and scarlet fever. It is well known that, if the bed-clothes of a patient laboring under either scarlet fever or small pox be closely folded up, they will retain the infectious matter, and communicate the disease at a great distance of time; but the influence of free ventilation is so great, that medical practitioners who are attending small pox patients, and who go from them into the open air, do not spread the disease. Indeed, all infection is weakened by dilution with air. The danger of infection is augmented, if, along with bad ventilation, the atmosphere of the room be moist from any cause.

It is further consolatory to know that the infectious matter, even of the most virulent description, is not poisonous to every one who is placed within the sphere of its influence. A predisposition of the body to receive the infection must exist before it can be communicated; a condition which is augmented by fatigue and watching, defective nourishment, mental depression, or anything which can lower the vital powers. The necessity, therefore, of maintaining these powers by attention to rest, a sufficient quantity of good and generous diet, and cheerfulness of mind, need not be insisted upon.

In every case of infectious disease, the attendants, even in the best ventilated rooms, should stand on the windward, or on that side of the sick-bed from which the current of air comes; as, by neglect of this rule, and by standing in the current which has passed over the patient, the infectious exhalations are blown upon them in a direct stream from the body of the patient. The attendants should never lean over the sick, nor should they receive their breath. The health also of the nurses should always be supported by nutritious and generous diet; but not by brandy, nor any other ardent spirit.

The term *infection*, in its most extensive signification, implies some deleterious matter, originating from any source, and transmitted through the air, which is capable of causing diseases in the human body. When this matter is emanated from the diseased bodies of men, the term is frequently regarded as synonymous with *contagion;* but, in strictness of language, the latter refers only to the communication of disease by *contact*. Whatever may be the matter of infection, it may enter the body through the medium of the lungs, which is the most ready inlet, or by the saliva, or even through the surface, if the skin be abraded, or if any ulceration be present. The influence of infectious matter is evidently exerted on the nervous system, displaying itself by debility, inertness, dislike to motion, great susceptibility of cold, irritability and despondency of mind, and by the production of a disease similar to that of the person from whom the

infectious matter has proceeded. The infection may be supposed to have taken effect, and to have produced the actual disease, when the person who has been exposed to its influence is attacked with giddiness, pain of the head, irregular heat and chills, nausea, and, if the infectious disease be small pox, convulsions. These symptoms are sufficient to denote the necessity for immediate medical advice.

Temperature. — Next to ventilation nothing is of more importance than the regulation of the *temperature* of the sick-room, avoiding both extremes of elevation or of depression; but much depends on the nature of the disease.

The best general temperature of a sick-room is 60° (Fahr.); and it is preferable to regulate this rather by the thermometer than by the sensations of the patient or the attendants. Under some circumstances, however, the feelings of the patient, and his susceptibility of impressions upon the skin, should not be overlooked. Thus if the temperature be a little above that of summer, and the patient, nevertheless, feel chilly, it should be raised five or six degrees. This chilliness is very apt to be felt in a dyspeptic state of the habit, and more especially when it is accompanied with hypochondriasis. It differs from that more severe but transient coldness which accompanies intermittent fevers, and some other periodical affections; and it requires an elevated temperature of the air for its removal, whilst the cold stage of intermittent diseases is best relieved by the warm bath, either general or local.

So important is the regulation of temperature, especially in fevers, that it often does more good than any other remedial measure. I have seen patients, laboring under high delirium in a close, ill-ventilated room, become rapidly quite collected by merely lowering the heat of the apartment twelve or fifteen degrees.

In convalescence, as the air of the sick-chamber should be frequently renewed, the temperature in spring and autumn ought to be maintained as near as possible at 55° to 60° (Fahr.); and it should be very gradually lowered as the invalid acquires strength, so as to enable him to bear with impunity the varying temperature of these seasons in the open air. Even then, if the previous disease has been pulmonary, the air admitted to the lungs should be tempered by the use of the Respirator, or a muslin handkerchief tied around the mouth. When the invalid first ventures out of doors, nothing, indeed, is so essential, in a prophylactic point of view, as avoiding extremes and sudden transitions of temperature.

Cleanliness. — Although *cleanliness* in the sick-room is essential, yet it may be carried so far as to become an annoyance to the invalid, and consequently to prove injurious. It is not requisite to sweep the room daily, nor to dust and arrange the furniture every morning, provided order be preserved in the room, and nothing but what is immediately necessary for the comfort and convenience of the invalid be permitted to remain in it. It is truly distressing to observe the confusion which prevails in some sick-rooms; everything being out of place, and to be searched for when it is wanted.

The period chosen for cleaning and arranging the sick-room should be the morning; as, after a night's rest, the patient is more able to bear the little noise and bustle which it always more or less occasions. The carpet should be sprinkled with moist tea-leaves, and lightly swept; and during this operation the curtains of the bed, if there be any, should be drawn.

It is scarcely requisite to insist on the necessity of the utmost attention to the cleanliness of everything in the sick-room. The moment after any vessel or implement is used by the invalid, it should be removed from the apartment, and returned as soon as it is cleaned. Nothing in the form of a slop-basin or a slop-pail is admissible; they only administer to the laziness of nurses.

The necessity of cleanliness in the vessels used for the food of invalids is strikingly illustrated in the bad effects arising from the neglect of it when an infant is brought up by hand. In such a case, if either the feeding-bottle, or the boat, which is employed, be not instantly cleansed after the meal has been given, the small portion of the pap or food which remains in the vessel becomes sour, and taints the whole of the fresh food mixed with it, causing colic and convulsions in the infant. The same risk of injury occurs in the sick-room, if the vessels used for administering food to the invalid be not instantly and well cleansed after every time they are used.

It is too common also to use one glass or cup for administering medicines, and to leave it unrinsed from time to time, — a custom which may prove as deleterious as a defect of cleanliness in vessels employed for food. Some medicines, when they are exposed to the air, rapidly undergo changes which alter their properties; and this alteration having been undergone by the small portion which is always left in the glass or cup, communicates the disposition to be decomposed to that which may be next poured into the cup. An active medicine may be thus rendered inert; or one which is mild in its operation may be so changed as to operate with hazardous energy. The same precaution, as to cleanliness, is also requisite as to the minim measure, when the medicines are directed to be administered in a form which requires its employment.

Darkening the Sick-room. — It is a common error to imagine that a sick-room should always be either *partially* or *wholly darkened*. In some diseases, as, for example, fevers, when the eyes are acutely sensible to light, so that they remain half closed, and the eyebrows are contracted, the greatest relief is experienced from darkening the room. When delirium is present, a certain degree of darkening is in some instances serviceable; whilst in others, especially when the delirium is accompanied with visual illusions, nothing so readily dispels these, and consequently abates the delirium, as the admission of the full daylight into the sick-room. There is much difficulty, however, in determining which state of the apartment is likely to be most serviceable in any particular case. Observation of the effects of light and darkness, in the individual case, must be our guide.

These illusions of the sight are generally the result of former im-

pressions, renewed at a moment when the brain is in such a disturbed condition as to set aside the exercise of judgment. In this condition of the brain, the renewed conceptions are not readily corrected, as in health, by impressions received from the external world; hence, they become more vivid in the mind of the invalid when the sick-room is darkened, and all visible objects are shut out. They are usually dispelled by new impressions on the organ of sense chiefly implicated; on which account, those which are connected with sight seldom occur during the day, when real objects are presented to the eye, unless the brain be so over-excited as to bring the conceptive faculty into intense exercise, sufficient to awaken those false perceptions which create a belief of the presence of individuals not only not present, but who have been long dead. This state of the mental organ is similar to that on which depend the spectral illusions of the insane, but differing from it in its transient nature. I have frequently witnessed the conversation with one of these spectral beings instantly terminated, and the whole illusion dispelled, on opening the window shutters of the room; whilst the invalid has thus expressed himself: "Bless me! I thought I was talking with Mr. ——, just now; I must have been dreaming; for now I recollect he has been dead many years." A twilight obscurity in the sick-room is often more productive of these illusions than darkness.

The Nurse. — When all the arrangements are completed in the sick-room, little benefit can be anticipated if a proper nurse be not obtained to render them available to the invalid. Every female, who wishes to act as a sick-nurse, should be obliged to serve a certain time as an assistant nurse in one of the public hospitals, and to receive a certificate of her efficiency before she leaves the establishment. The advantages which the public would derive from a body of nurses, educated in this manner, must be obvious to every one who has had opportunities of observing the miserable working of the present system.

In hiring a sick-nurse, the qualifications which should regulate our choice, refer to *age*, *strength*, *health*, *temper*, *disposition*, *habits*, and *education*.

Age. — She should not be under twenty-five, nor above fifty-five years of age. This period is fixed upon, on account both of the physical powers and the moral conduct of the individual. Under twenty-five, the strength of a woman has not reached its maturity, and is scarcely adequate for lifting patients in and out of bed, and for many other duties which require strength, connected with the office of a nurse; but the strength and the muscular power in females begin to fail after fifty-five, when the natural transition from maturity to decay takes place.

Strength. — The foregoing remarks respecting age render it almost unnecessary to say that a woman of a naturally delicate frame of body is unfit for a sick-nurse: at the same time, a coarse, heavy, and masculine woman is, for many reasons, objectionable. Whilst

strength is requisite, the frame should be such as to indicate activity.

Health. — None of the qualifications of a sick-nurse are of importance more than health. An individual who herself requires attention is ill-calculated to attend upon others. A woman who is asthmatic, or has any difficulty of breathing, or an habitual cough; who is rheumatic or gouty, or has any spasmodic affection; who is afflicted with palpitation; or suffers from periodical headache, vertigo, or a tendency to paralysis; or who is consumptive, or scrofulous; or has defective sight or hearing; or anything which causes decrepitude, is disqualified for a sick-nurse. It is important, also, to ascertain there is no hypochondriacal nor hysterical tendency, nor predisposition to mental depression.

Temper and Disposition. — It is scarcely requisite to say that an attendant upon the sick should possess a happy, cheerful, equal flow of spirits; a temper not easily ruffled; and kind and sympathetic feelings; but, at the same time, not such as to interfere with firmness of character. The expression of the countenance should be open and winning, so as to attract the good-will and confidence of the invalid; a pleasing and gentle manner being more likely to gain esteem, and insure obedience to the orders of the physician, than the most persuasive arguments which can be addressed to the understanding of the patient.

A collected, cheerful expression of the countenance, in the attendant on the sick, is likely to inspire hope, and to aid the efforts of the physician for the recovery of his patient.

The general disposition of a sick-nurse should be obliging. Every little office, which the invalid may require to be done, should be performed at once, and without the smallest apparent reluctance, even when the necessity for its immediate performance is not absolute. There is also an earnestness of manner, which should, if possible, be obtained or acquiesced in by the sick-nurse, as it impresses the idea that she feels deeply interested in the case; a circumstance which is always highly appreciated by the patient.

Finally, it is unnecessary to say that a nurse should be honest, as no description of servant has so much in her power. But the honesty of the nurse is not to be measured by her respect for property; she must be above imposing on the physician, with respect either to medicines or to diet. Her religion, also, should be sincere, but not pharisaical; and although she may occasionally persuade her charge "to put his trust in God, the fountain of health," * yet she must recollect that preaching is not her province; and, when mistimed, even the best advice may prove not only profitless, but injurious; and this is especially likely to be the result, when the doctrines which she professes are of a controversial kind.

With respect to gossiping, it is a detestable habit under any cir-

* Fuller.

cumstances; but, in a nurse, it may be productive of the greatest danger, produce family feuds, and a thousand other evils.

In her Habits, a sick-nurse should be sober, active, orderly, and clean, and neat in her person.

The first of these habits — namely, *sobriety* — is so essential a qualification in every attendant in the sick-room, that it requires no comment. Happily, the desire for ardent spirits is now less frequent than formerly, when women were seldom employed as nurses until they were nearly superannuated, and until their habits, good or bad, were too firmly rooted to be removed.

The Activity essential for a good nurse does not imply a bustling or fidgety manner, but a quiet, steady method of proceeding in the performance of her duties, equally devoid of fluster, turbulence, or noise. This activity is generally associated with orderly habits; a most valuable qualification, and without which the sick-room becomes a scene of confusion and disgust. Every medical man must have witnessed this state of disorder with regret, when, on visiting his patient, he finds no chair to sit upon, until some article of bedding, or of clothing, be removed from it, and the seat dusted with the apron of the nurse; and when a former prescription, or anything else, is wanted, he must wait until the nurse rummages out half a dozen of drawers in search of it.

Another quality, usually conjoined with activity and orderly habits in a nurse, is cleanliness in her own person, and in that of her charge, as well as that of the sick-room. The dress of a nurse should be simple and neat, without trimmings. Nothing is more out of place than a fine lady attempting to perform the duties of a nurse.

Education. — It may appear a refinement to talk of the *education* of a nurse; but there is not a greater difference between noon-day and midnight than between an educated and an ignorant nurse. The former is often an aid to the physician, not only in carrying his orders into effect, but by observing and informing him of symptoms of great importance which have occurred during his absence: whereas the latter is a source of constant anxiety, and too often assumes the privilege of acting in direct contradiction to his orders, and according to her own opinion.

Unhired Attendants.

The selection of a good nurse, however eminently qualified she may be for her duties, does not supersede the attendance of a relative or a friend in the sick-room; on the contrary, I can conceive no condition so deplorable as that of an invalid left altogether to the care and management of a hireling. It is, nevertheless, too true that few ladies, even those who are wives and mothers, have any acquaintance with the arrangements of the sick-room, and the management of the invalid; they are, consequently, too often forced to be guided by, and to rely for instruction on, the nurse, instead of being able to superin-

tend her conduct, to ascertain that she performs her duty, and to correct her failings.

The degree of *intelligence* which is demanded in a nurse is very different to that which is requisite for a wife or a relative in the sick-room. The intelligence of the nurse is directed to supply the wants of the invalid, to administer to his comforts, and to obey the instructions of the physician; that of the friend or relative involves the power of discriminating disposition and temper; of watching the progress of the disease, and judging of the propriety of not pursuing certain measures, which, although indicated by the symptoms at the time of prescribing, yet may require to be altered, and consequently detailed to the physician, whose presence may be requisite before his next intended visit. It is of the utmost importance, also, that relatives attending in the sick-room should be able to control their feelings in the presence of the invalid.

Nothing is more essential, in the domestic management of diseases, than a knowledge of the natural disposition and temper of the invalid. An irritable or a passionate man requires a very different management from that which is proper for a man of naturally mild and easy disposition. Disease awakens, in an augmented degree, the irritability of the former; he becomes impatient of contradiction; and every time his opinions are injudiciously opposed, the turbulent agitation of the nervous system which follows either increases the disease or weakens the influence of the remedial agents. On the other hand, a mild and gentle disposition often leads to extreme sensitiveness, when disease attacks the body: a word, a look, is sufficient to touch some sympathetic cord; to unstring the whole nervous system; and to augment the morbid susceptibility already present in the habit to a degree which is not always devoid of danger. Much discretion and judgment, therefore, are requisite in both instances: in the one case, to prevent ebullitions of temper; in the other, to refrain from anything that might be construed by the invalid into harshness; and yet, at the same time, in each case, to maintain that influence over the patient which the treatment of every disease demands in an attendant on the sick.

Prejudice and Antipathies. — In those who are imperfectly or erroneously educated, the judgment is apt to be biassed by *prejudice* and *antipathies;* and, under the influence of these, it is misdirected in a manner of which the individual is often wholly unconscious; thence the necessity of freedom from prejudice in the attendants in the sick-room, and the farther importance of the friends or relatives of the sick being able to superintend the conduct and the management of hired nurses. On the other hand, the judgment, even in the well-educated, is apt to be misled by the *affections*, the influence of which is as much opposed to the healthy exercise of discrimination as the prejudices of the ignorant. Self-control, therefore, is also an essential qualification of the sick-room.

It is only from knowing that the attendants of the sick are possessed of intelligence and self-control, that a physician can rely upon

having his orders correctly and duly executed: when those qualities are absent, he has to dread, on the one hand, the presumption of ignorant prejudice; and, on the other, the improper yielding of sensitive indulgence. To the invalid, also, it is important to know that the directions of his physician are fulfilled by an intelligent person; for, even in the most severe diseases, as long as the mental faculties remain unaffected, a sick man is capable of detecting ignorance, or the effects of prejudice, in his attendants; and, when he is convinced of the existence of either, all the influence of the individual, whether nurse, or friend, or relative, is at an end.

Were the business of the sick-room (independent of the wants and comforts of the invalid) confined to the mere observation and collection of facts — namely, the noting of the symptoms of disease — and reporting them to the physician, it would be superfluous to urge the necessity of superior intelligence in its superintendent; but many of its duties require not only a well-regulated understanding, but an equally sound condition of the moral feelings and the benevolent affections, with a recognition of the authority of conscience in the whole operations of life. In the period of sickness, under the direction of the judicious and discreet, an invalid may be led to the investigation of his moral and religious condition, and to review his past conduct, with the determination of turning the result to his future welfare, should he happily recover and re-enter society. Surely such important duties as these cannot be intrusted to the unqualified, or the ignorant, or the hireling; nor can more be required to demonstrate the importance of adding to the other branches of female education a knowledge of the various important duties of the sick-room, which females, whether as mothers or daughters, or wives or friends, are likely to be called upon to fulfil.

Prognostics.

In every disease the medical attendant is naturally called upon to deliver his opinion of the degree of danger which hangs over the patient: hence, it is unnecessary to enter into any minute details on the subject of prognostics. But, as in many diseases changes occur, in the absence of the practitioner, which ought instantly to be examined into, in order that the danger likely to accrue from them may be averted, it is important that the friends and ordinary attendants of the sick should be aware of their presence, so as to obtain the immediate assistance of the medical attendant. Were this information, also, more generally diffused, many unnecessary visits would be saved to the physician, and much unfounded suspicion of danger prevented from distressing and torturing the minds of the friends of the sick.

In Fevers *delirium* alone should excite *no* alarm, unless it be very high, or of the low, muttering, incoherent kind. In jaundice, and in diseases of the chest, it is alarming; and in the latter stages of pulmonary consumption, its presence always indicates the approach of death.

Great *confusion of thought*, *loss of recollection* of the most recent occurrence, a restless, wandering eye, and a correspondent vacancy or confusion of countenance, are always to be dreaded in fevers and in diseases of the brain. An expression of *great anxiety* is equally alarming in all acute diseases; and a presentiment of death is still more to be dreaded.

Hoarseness, with constant spitting, occurring at an early period in small-pox, is very unfavorable.

Squinting in affections of the head ought to be particularly noticed, and mentioned to the attending practitioner; and the same remark applies to a greatly *contracted*, or a *dilated*, or an *immovable* condition of the pupil of the eye; or the turning up of the pupils under the upper eyelids.

Deafness is *not* an unfavorable occurrence in continued fever; but a sudden attack of headache in pulmonary diseases ought instantly to be mentioned to the physician.

The Sudden Disappearance of Pain in inflammatory affections of the bowels is always to be dreaded; but it does not in every instance portend the existence of mortification.

Cough, depending on inflammation of the bronchial membrane, suddenly supervening on a suppressed eruption, is always to be dreaded.

In Croup, when the breathing is *audible*, or when there is a *crowing* sound in inspiration, or a *cooing* or *croaking* respiration, danger is present.

In Hooping-Cough, when the paroxysms suddenly increase in violence, and the face becomes livid, and the thumbs are drawn across into the palms of the hands, the appearance of convulsions may be anticipated: hence immediate notice of these symptoms should be communicated to the medical attendant.

Rigors invariably excite alarm; but they are only dangerous in chronic internal diseases, in which they often indicate the formation of pus, or the existence of suppuration.

Pallidness of the countenance, with a slight degree of *lividity*, are symptoms of hazard in the inflammation of the lungs.

The Position of the Patient as he lies in bed, especially in fevers, is of much importance. Constantly lying on his back, with a tendency to sink to the bottom of the bed; a propensity to keep the arms and the feet out of bed, and to uncover the trunk; or to pick the bed-clothes; tremors; twitching of the tendons; grinding of the teeth, and sleeping with the eyelids half open, and the white of the eyes only seen; are all justly regarded as symptoms of great danger.

Fainting (*Syncope*) is to be considered alarming in diseases of the heart, or during profuse bleeding from the nose, or from any other

part: *deep sighing*, also, under such circumstances, is most unfavorable, and often indicates rapid dissolution.

Hiccup, in the advanced stages of either acute or chronic diseases, is invariably alarming.

Difficulty of Swallowing, also, in the advanced stages of fever, palsy, and affections of the head, always indicates extreme danger; *vomiting*, on the contrary, is not unfavorable, unless it be very severe and protracted; but, if the ejected matters be putrid, or feculent, then the vomiting is always to be dreaded.

Coma, or an irresistible propensity to sleep, following the sudden suppression of gout, or the cessation of periodical bleeding in piles, or the healing of old sores, is always alarming, and requires prompt medical assistance.

Convulsions without fever or any affection of the head seldom prove dangerous; but they are never free from danger when they are accompanied with stupor or coma. They are also dangerous when inflammatory fever is present. They are less dangerous in women than in men, in the young than in advanced age. In infancy, convulsions are more to be dreaded in the robust than in the delicate and irritable child.

Diarrhœa is, under every circumstance, an unfavorable event, when it occurs either in fevers, or in the termination of chronic diseases; and the passing of involuntary stools, when scarcely any diarrhœa exists, is equally to be dreaded.

Retention of the Urine, as well as its *involuntary discharge*, is always an unfavorable symptom.

Purple Spots appearing on the skin, *livid lips* and *cheeks*, *oozing of blood*, *sudden flushings* followed by pallor, are unfavorable symptoms; and the appearance of œdematous swellings of the legs and skin in the last stage of chronic organic diseases always indicate approaching death. When *purple spots*, also, appear in small-pox, with flattening of the pustules on the trunk of the body, and a white pasty aspect of the eruption in the face; and if, at the same time, the extremities become cold, any hope of recovery can scarcely be entertained.

Great and continued, or progressing *emaciation* in chronic diseases, and what is termed the *facies Hippocratica*, are to be dreaded.

Excoriations on the parts on which the body rests, — for example, the haunches, or the lower part of the back, — especially if these become livid and sloughy, always indicate extreme danger.

Great Difficulty of Breathing, even to a feeling of suffocation, is not necessarily hazardous in *asthma;* for although few diseases are so little under control by the interference of the physician, yet asthma seldom proves fatal, unless it tends to the production of other diseases.

In Consumption, partial sweating, as of the head, the chest, or the limbs, are always unfavorable symptoms.

When *pregnancy* occurs in a woman laboring under consumption, the disease is arrested, until after delivery, as if Providence threw a shield over the mother for the safety of the offspring.

The Sudden Disappearance of Swelling of the Legs, in chronic organic diseases, is indicative of approaching death.

When a child, instead of rallying after any acute disease, becomes *emaciated*, and the belly is large and tympanitic, there is always much danger.

Ovarian Disease, or, as it is usually termed, *ovarian dropsy*, has hitherto proved incurable; but it is relieved by tapping; and, if the powers of life be sustained by proper food, and carriage exercise in the open air; and if all medicines be let alone, except such as are required to regulate the bowels, life may be sustained for many years.

All diseases not involving organic changes are, with a few exceptions, more or less under the control of medicines, and are consequently curable. But some diseases, in which no organic changes have been discovered, are nevertheless incurable. This is the case with spasmodic asthma, which has rarely been cured.

It is true that functional disturbances are not unfrequently associated with organic diseases; but, under such circumstances, it is the province of the attending physician to point out to the friends of the patient the greater or the less degree of danger in these complications.

Diet, etc., in Disease and Convalescence.

In numerous instances, much hazard often exists after disease has disappeared, and when the patient is declared convalescent: and as this period in the removal of diseases is left to the management either of the patient himself or of his friends, some general remarks respecting it, and also in reference to particular diseases, are requisite.

In every recovery from sickness, whether external or internal, before the salutary advantages obtained from the treatment be confirmed, the organ or part which has suffered must be either left at rest or be used, according to the nature of the case. Thus, if any part have suffered from inflammation, it must not be used for some time after the inflammation is subdued. If the eyes have suffered, the person must neither read nor write, nor expose the eyes to the heat of the fire, nor to a strong light, until some days after every trace of the disease has disappeared. If the arm has been affected it must be kept at rest; and if the leg, not only should walking be refrained from, but the limb should be placed rather higher than the trunk of the body. If the previous disease has affected the brain, every mental exertion must be avoided; and so on, whatever may be the organ which has especially suffered. Even when the exercise of the organ is resumed, it should not be carried to fatigue, nor, on any account, should it be such as to produce excitement. At the same time, it

must not be forgotten that, in the treatment of external injuries, when it has been necessary to keep the limb long in a sling, in one position, — as, for instance, in fractures, — the muscles which bend the arm acquire from the habit a contraction which cannot be overcome by the antagonist muscles, owing to the length of time they have been on the stretch weakening their contractile power. The arm, therefore, should be frequently taken from the sling, and, being rested upon the elbow, a moderate weight should be held in the hand, and friction with oil employed upon the contracted muscles. It is true that surgeons usually give directions for this operation, before they quit the management of the case; but surgeons, as well as physicians, are sometimes dismissed before the convalescence is complete; on which account, arms and limbs have remained contracted for life, from a want of the knowledge necessary to counteract the evil at an early stage.

I say nothing respecting the continuance of remedies during convalescence from many diseases, except urging the necessity of regulating the bowels.

The most important part of the management of convalescence certainly refers to *air*, *exercise*, and *diet*. The errors daily committed, in all these matters, exert the most powerful influence in retarding complete restoration to health; and often, indeed, induce evils of a more formidable kind than the diseases from which the patients have just emerged.

1. *Air*. In every convalescence, whatever may have been the nature of the disease, if it has been so severe as to wear down the strength of the invalid, country air is essential. The benevolent Author of our existence has made medicinal the hills, the vales, the groves, and all the harmonies of nature; and in the repose of these man finds a balm, not only for a wounded sprit, but for his stricken body.

In selecting a country residence for a convalescent, care must be taken to ascertain whether any source of malaria exists in the neighborhood; as, in that case, even if all other circumstances be favorable, the place is exceptionable.

2. *Exercise*. In convalescence, much caution is requisite in apportioning the exercise to the degree of returning strength. When the convalescent is still too feeble to take sufficient exercise on foot, the best substitute for it is riding horseback; but, as soon as walking can be borne, it should be preferred to either horse or carriage exercise.

3. *Diet*. In health, diet may be left, in a great degree, to the inclination or the taste, as far as regards the quality of the food; and, although diseases occasionally originate from repletion, yet, in general, the appetite may be considered as the best regulator of quantity, when the food is simple, and the appetite is not pampered by high seasoning and rich sauces. In disease, however, a very opposite rule is to be observed; the regulation of both the quantity and the quality of the food is of the utmost importance. The taste is often so perverted as to desire that which would prove injurious; and were appetite to be the guide of quantity, diseases would frequently not only be increased in severity, but life itself would be brought into jeopardy.

As soon as solid animal food can be taken with impunity, that which is most digestible should be selected. An opinion has generally prevailed that gelatinous matters, and meats which readily yield jelly, — such, for example, as veal and lamb, — are the most easily digested, and at the same time, are also the most nutritive. This is a mistake; for, with the exception of poultry, the flesh of young animals is stringy and of a lax fibre, and is even less easily digested than that of too old animals, which presents a great density of texture. The middle-aged animals afford the most digestible food.

Nothing tends to lessen the density of the fibre of every kind of animal food so much as keeping it for a certain time before it is cooked. In this case, the tenderness is the result of incipient decomposition or putrefaction; but the utmost caution is requisite to prevent this from advancing so far as to present the slightest trace of taint, in the food of the convalescent. In the low state of vitality in convalescence, the change which commencing decomposition (putrefaction) causes, renders animal food, in that condition, a source likely to occasion either a relapse into the disease from which the patient has recovered, or to form a new disease.

In examining the relative value of other articles of diet adapted for the sick and convalescent, the first which presents itself to our notice is

Milk. — As milk is the food of almost all young animals, its digestibility appears at once evident; and there can be little doubt that it is very digestible, when it is drunk immediately after it is drawn from the udder of the cow, or that of the ass, or the goat, before its components have time to separate. When this separation is effected, either spontaneously by time, or by means of rennet or other agents, its properties are altered, and its digestibility is lessened.

Cream, when intimately united with the other components of milk, — namely, the curd, or the caseous part, and the whey, — is not the same substance as after its separation. In the milk, it is more easily digested, and is the most nutritive part of the milk. But in its separate state, it is ill adapted either for the sick or convalescent, except in the form of butter, which is not unwholesome, unless it be eaten in excess or be melted.* In the same manner the separate *curd* is indigestible; and *whey* itself, although highly nutritive, yet is flatulent; nevertheless, it is an excellent demulcent in many cases of disease. But none of the components of milk are equal to milk itself. It is often necessary, in convalescence, to dilute it in water.

Eggs. — It is not uncommon to hear that the yolk of a raw egg, beaten up with water and sugar, with the addition of a small quantity of white wine, is a light and nutritive aliment in convalescence, and even in some states of disease; but *eggs* are much less digestible in this form than when they are lightly boiled. In jaundice, however, arising from viscid mucus obstructing the orifice of the common duct, the yolk of a raw egg beaten up with cold water is serviceable.

* [Although cream is not as digestible as milk, yet it is much less liable to turn acid in the stomach; it is often beneficial to dyspeptics, either alone or diluted with water.]

Fish, at least the white kind, stimulates much less than the flesh of land animals; hence it is a proper food for those laboring under some acute diseases; and also for convalescents, when a sudden return to more stimulating food would prove hurtful. But it is not adapted for convalescents, when the object is to bring up rapidly the strength of debilitated habits.

Raw *oysters* have been erroneously supposed to be both easy of digestion and nutritive. The latter opinion is, in some degree, true; but the former is erroneous. Raw oysters are less digestible than plainly cooked oysters. Both are improper for the sick and for early convalescents. Lobsters, crabs, prawns, cray-fish, scallops, and other shell fish, are still more objectionable.

If fish of any kind be admissible, it should be simply boiled: fried fish is even worse for invalids than the outside or the brown of roasted meat.

Vegetables. — In reference to *vegetable diet*, it is only the mildest description of esculent roots that are fitted for the use of the sick. In preparing all of them for the sick-room, they should be well boiled in two distinct waters, until they are soft and very soluble, and in a state not to leave undissolved anything which could act as a mechanical irritant on the intestinal canal. When properly cooked, they are moderately nutritive, and free from any stimulant properties; and they are well adapted for the stomach of the sick, unless in cases in which the torpor of the organ is such as to permit them to run into acetous fermentation and to prove flatulent.

Fruits. — With respect to *fruits* they produce the most diversified effects; and, consequently, are more or less proper for invalids, according to circumstances, either connected with themselves or with the condition of the patient at the time. The stone fruits, with the exception of the ripe peach, or the nectarine, are to be rejected. The apple tribe, except very soluble pears, are still less admissible. The apple, however, when roasted, and when the seeds and the hard central parts, as well as the skin, are removed, is less objectionable; and, as it possesses laxative properties, the roasted apple is well adapted for the sick, when food is at all allowable, and when the bowels are torpid. The orange, if fully ripe, is grateful and wholesome to all invalids, and is only equalled in these qualities by the grape; but in using the orange, the pulp should be rejected. Care, also, should be taken not to swallow either the skin or the seeds of the grape. Strawberries are a little stimulant, of easy digestion, and more cooling than the other small fruits; mulberries are, also, unexceptionable; but currants and gooseberries, and even raspberries, are not free from objection for invalids laboring under acute diseases.

With the exception of *oat* and *wheaten bread*, all the varieties of farinaceous aliments may be regarded as modifications of starch, containing little nutritive matter, and therefore well adapted for the sick-room. It has been supposed that arrow-root, sago, tapioca, and similar substances, are very nutritive, because they form mucilages with boiling water: but this is not the fact; and were they very

nutritive, they would be ill adapted for invalids. Rice in every case where the stomach is in an acescent state, is preferable to the other farinaceæ, because it is less fermentable.

The farinaceous food, which is ordered in the convalescence of children from acute diseases, is often made of bread so as to constitute *pap*. No description of food has a greater tendency than this to become sour; a quantity only sufficient for a single meal, therefore, should be made at a time; for what remains is always sour before the next meal; and even if the quantity be small, and it be mixed with fresh pap, it communicates its faculty of becoming sour to the whole mass.

Fluid Aliments.

Water. — The best and the most universal beverage for the sick is *water:* but the qualities of water differ, according to the sources whence it is procured. The fewer foreign ingredients it holds in solution the greater are its diluent properties. Distilled water, or rain or river water filtered, and that of soft water springs which filtrate through silicious strata, are the only kinds proper for the use of the sick-room. Hard water, under whatever name it is found, whether as spring water, or pump water, or well water, should be excluded. The impurities of river and rain water are merely held in suspension; consequently, they are readily removed by filtration.

Water itself is aliment; many individuals under certain circumstances have lived for a considerable time upon it alone. Those who live chiefly on animal food require more drink than those who eat much vegetable matter.

The influence of water on the animal economy may be regarded in two points of view:

As an article of diet.
As a medicinal agent.

As an *article of diet*, in health, water is the beverage provided by nature for all animals, man not excepted. The sensation of thirst is the natural call for fluids, either to assist digestion, or to allay a dry, hot condition of the mouth and the gullet. The consequence of not satisfying this call is fever of a nervous kind; and, if it be long resisted, inflammation of the air passages. On the other hand, too much fluid is injurious; for although the vital powers of the stomach counteract the tendency which it affords, by over-diluting the gastric fluid, to the fermentation of the aliment in the stomach, yet, when it is in excess, those vital powers languish; hence spontaneous chemical changes in the contents of the stomach take place, and induce dyspepsia. For all the purposes of dilution, *in health*, water is adequate, and it is the only truly wholesome beverage.

As a *medicinal agent*, water is demanded in every disease in which a dry skin, and an elevation of the natural heat of the surface, constituting fever, are present. In this case, the desire is for cold water, or

cooling fluids; and it should always be indulged. The degree of temperature, however, must be regulated by the condition of the invalid; but the best medium temperature is between 50° and 60° Fahr.; although even 60° is too low, when the debility of the frame is considerable.

The qualities of the various kinds of beverages proper, and generally employed in the sick-room, should be known.

Toast-water, when properly prepared, which it seldom is, forms a useful beverage in the sick-room. It is slightly nutritive, owing to its containing a small portion of gluten, in conjunction with fecula and sugar. It is one of the oldest and one of the best diluent demulcents; diluting at the same time that it softens the acrimony of the secreted juices of the stomach, in febrile diseases.

Gruel, whether made of groats or of oatmeal, is less mild and demulcent than barley water; and it is more likely to undergo the acetous fermentation in the heat of the stomach; a circumstance which is greatly favored by the sugar and butter which is sometimes added to it. Unless gruel be very thin, it can scarcely be regarded as diluent; and when thick, it is too heating an aliment for patients laboring under febrile symptoms.

Tea, in the form in which it is usually taken, is too stimulant and astringent to be a good diluent; and, when it is strong, the narcotic property which it possesses renders it improper for most invalids, whatever may be the nature of their diseases. As it is, nevertheless, agreeable to most palates, and very refreshing, it may be taken in moderate quantity, provided it be not strong, without any hazard.

Sage, *balm*, and *mint teas*, are often substituted for common tea. Each of them undoubtedly allays the irritability of the stomach in some cases; but, as general beverages in disease, they are less useful than toast-water. *Raspberry vinegar*, *lemonade*, *tamarind tea*, *apple tea*, and similar compound diluents, should never be administered without the consent of the physician. If a patient be taking an antimonial, they will excite vomiting; if a mercurial, griping; and they are equally incompatible with many other medicines, and with many conditions of the stomach in disease. They are a description of beverage greatly recommended and largely distributed by the Lady Bountifuls in the country, and have frequently been productive of serious mischief.

Coffee is more heating, and, consequently, less admissible than tea; it may, however, be taken, if it be largely combined with milk. *Cocoa* and *chocolate* are still more objectionable than either tea or coffee in the sick-room.

With respect to the Number of Meals, and the periods best adapted for taking them, it is scarcely requisite to remark, that, although in health, three moderate meals, at proper intervals, are customary, and well adapted for the support of the frame, yet, under the changed

condition of the system in disease, it would be improper to take any regular number of meals, or to observe any stated periods for taking them: hence no general rules can apply.

As a general rule, in the decline of diseases, and on the approach of convalescence, when the desire of taking food returns, the best time for the principal meal, *dinner*, is about two hours after noon. If the breakfast be taken at nine o'clock, and the evening meal at seven, the hour of two is the middle period of the day; so that, when dinner is taken at that time, the intervals between breakfast and dinner, and between dinner and supper, are not only equal, but neither is too short to limit the complete digestion of the previous meal; nor too long to injure the powers of the weakened stomach by protracted fasting.

All acute diseases require more or less abstinence, especially when the object of the treatment is to lower the system; and in some chronic affections, abstinence is almost essential. If this be true, the necessity of the strictest observance of the directions of the physician on this subject must be obvious. It is one, however, which is not only neglected, but is often combated both by nurses and friends; and indulgences, which are supposed to be of too trivial a nature to cause any injury to the sick, have often been followed by fatal effects.

But, although abstinence be requisite during the existence of an acute disease, yet it is injurious when it is too rigidly maintained after convalescence is actually established; it often induces a new train of symptoms, not very unlike those for which it was properly prescribed and the removal of which it has aided: namely, acceleration of the pulse, increased impetus of the heart, headache, and even delirium.

General Diseases.

Happily, in *febrile affections*, the appetite of the invalid is not in a condition to desire food; and no stronger demonstration can be required of the impropriety of forcing it upon him under such circumstances. Simple fluids, such as diluents, are all that he desires, all that the stomach can bear; and such alone should be administered in fever, before that low condition of the system, which demands the use of wine or other stimulants, supervenes. In these cases, when the patient desires more nourishment than is usual, animal food ought not to be given, unless by the direct recommendation of the physician. Indeed, in general, the inclination of the invalid happily revolts from animal food, as much as experience condemns its administration.

While febrile symptoms are present, farinaceous matters, little nutritious, such as barley-water, gruel, arrow-root mucilage, or sago, acidulated with lemon-juice, and sweetened to the taste of the patient, are most suitable; but even these should be given in small quantity, and at considerable intervals. The beverage generally most agreeable, and also most salutary, to those suffering under fever, is cold water.

In the decline of fevers even, as I have already remarked, although the severity respecting diet should be relaxed, yet much danger may result from mistaken kindness and over-zeal, in urging animal and stimulant food at too early a period of the convalescence. Indeed, the necessity of caution at this time is greater than during the continuance of the fever; and the more acute the disease has been, the greater must be the caution in the convalescence, especially if the treatment has been of an evacuant and lowering description.

The first change of diet, in the decline of fevers, should be to another article of the same kind of food which was allowed in the disease; for example, from simple *arrow-root mucilage* to *arrow-root and milk*, or to some other of the farinaceous compounds; whilst, at the same time, *asses' milk* may be given, in small quantity in the morning. *Rice*, one of the farinaceæ, is generally supposed to be astringent, but this is a mistake. It forms an excellent diet in all cases of early but decided convalescence. It should be well-boiled, and mixed either with broth and beef-tea, or gravy which has been cooled, and the fat taken from it. In the transition to animal food, *beef-tea*, *chicken-broth*, and *mutton-broth*, and other liquid animal decoctions, should be first resorted to; then *white-fish*, simply cooked; for, although fish is more digestible than animal food, yet it affords much less stimulant nourishment; it is therefore better fitted for the early stage of convalescence. When convalescence is completed, a more generous diet is admissible.

With respect to beverage, *water*, *toast-water* or *lemon-peel-water*, is sufficient, until the medical attendant declares that a little wine is requisite.

In convalescence from *fever*, it is an error to permit the patient to get up too soon. He should not leave his bed until his strength be considerably advanced. No danger can result from too strict an observance of this rule; whereas much risk may be incurred by its neglect.

If the head has been much affected, every mental exertion should be refrained from during the convalescence; and, according to the degree of suffering in any local organ, precautions must be taken to guard that part of the frame against a fresh attack of disease.

Eruptive Fevers require more precaution in convalescence than general fevers, both as regards diet and exposure to sudden alternations of heat and cold. This is more especially essential after measles and scarlet fever.

Measles are often followed by a distressing cough, and other symptoms of pulmonary inflammation; or by a harassing diarrhœa, which wears down the strength; or by inflamed eyes, catarrh, or obstinate toothache. In infants, *canker of the mouth* occasionally makes its attack and proves fatal. All these affections, after measles, might generally be prevented by taking care not to allow too soon a return to the use of animal food, or too early an exposure to cold or to night air. Even in summer, flannel should be worn next the skin for some weeks after the disease has disappeared.

Scarlatina is frequently followed by dropsical symptoms; which, however, might generally be avoided by the same attention to diet and regimen as after measles.

Small-Pox, when severe, and especially when confluent, is very apt to awaken into activity the dormant seeds of scrofula, if any hereditary taint exists in the constitution; hence abscesses, ulcers, and swelled glands make their appearance. These demand the aid of the physician or the surgeon. But if the convalescent be properly dieted, and recourse be had to a change of air as soon as his strength will permit, these evils may be avoided.

Erysipelas not unfrequently attacks convalescents from small-pox and other eruptive fevers. When it occurs, independent of any prior disease, the same attention to diet and regimen is requisite as in other eruptive fevers.

Convulsions, it is well known, are not unfrequently the result of errors in diet, in individuals with an irritable condition of the stomach and bowels. Advice should always be demanded respecting the diet of those who are liable to, and who suffer from, convulsions; but it must not be supposed that when they occur in children and have been subdued, a system of starvation is necessary to prevent their recurrence. As far as regards convalescence in such cases, it will be proper to bear in recollection the following rules:

1. When the patient is of a *full habit*, has a short neck, and a tendency to diseases of the head, the diet should be spare. The use of animal food, indeed, in such a habit, should be *wholly* prohibited in childhood, and very sparingly employed by adults; whilst vegetables, farinaceous matters, milk and weak broths, may be allowed.
2. When the habit of body is *spare*, and when languor and chilliness are present, the diet, although free from stimulus, yet should be nourishing, and consist of the lighter kinds of animal food; namely, poultry and fish, with a moderate share of vegetable matters.
3. Under all circumstances, and at every period of life, fermented liquors and wine should be either wholly avoided, or very sparingly used, in almost all convulsive diseases connected with affections of the head.

In convalescence from some varieties of convulsive diseases, the nature of the diet must depend on circumstances which cannot be judged of by the attendants of the sick-room; hence it should be referred solely to the medical attendant. In *St. Vitus's Dance* (chorea), for example, although a tonic plan of treatment may have been successfully pursued, yet the diet may be required to be mild, and wholly free from stimulus.

Attention to diet in *Hysteria* is most important. When the disease is connected with indigestion, the meals should be moderate; and rest in the horizontal posture should be indulged for an hour afterwards, and then moderate exercise taken. Fluid food, such as broths and gruel, are improper; yet animal food should be eaten only once a day. Tea and coffee should be very sparingly taken; and the sim-

plest beverages, even water and toast-water, should be taken in great moderation after a meal, and should not be drunk during dinner.

In convalescence from hysteria, change of scene and air are absolutely requisite. The mind should be directed to solid studies, and everything which can cherish morbid sensibility of the nervous system avoided.

Dropsy. — An opinion was long maintained that fluids are to be withheld from *dropsical* patients. No opinion was ever founded on more erroneous principles. Dropsical patients, indeed, should be allowed the free use of fluids. With respect to diet, it should, generally speaking, be light and unstimulating: but much depends on the causes of dropsy. There is, however, less necessity for a rigid adherence to low diet in this than in other inflammatory affections.

In Palsy, abstinence from all stimulating food, solid or fluid, must be rigidly observed; and the restriction should not be discontinued in convalescence. At the same time, change of air and of scene is always of decided advantage. In every instance, an easy state of mind, and freedom from every source of irritation, as well as from the anxieties of business, are indispensable.

Gout and Rheumatism. — In no diseases affecting the general habit are abstinence and repose more essential during the attacks than in the two which head this paragraph, when they assume an acute form. When they occur in weakened or in broken-down habits, it is too often supposed that the opposite plan of diet is to be pursued, and that stimulating food and a liberal supply of wine should be indulged; but nothing is more likely to prove injurious.

When the paroxysm subsides, it is too customary to permit the invalid to glide into his usual habits with respect to diet and regimen; consequently the plethora which originated the disease gradually returns; and the same plan being continued, paroxysm follows after paroxysm, at shortening intervals, until scarcely any interval occurs, and life is sacrificed on the altar of self-indulgence.

For some weeks after the paroxysm of gout has subsided, in a young or a middle-aged man, animal food should be sparingly taken, and fermented liquors altogether avoided.

Chlorosis, or Green Sickness, is a state of the habit which seems to depend on an impaired condition of the blood itself. Its treatment is well understood, and recourse to medical advice should never be neglected; otherwise it may terminate either in mental derangement or in sudden death. In convalescence from it, the diet should be mild and light, but nutritious; the exercise should be much within the limits of fatigue, and consist of both walking and horse exercise, daily, in the open air: the body, more especially the lower extremities, should be warmly clothed; the mind ought to be amused; all sedentary occupations thrown aside; and confidence placed in the honor of the physician, who should be made the repository of any mental anxiety, especially connected with the tender passion, which may be preying upon the vital energy of the body.

Affections of the Head.

WHATEVER may be the cause of *Apoplexy*, no disease requires more prompt and energetic treatment: the alarming nature of the symptoms is always sufficient to prevent any time from being lost by attempts to relieve the sufferer without medical assistance. Should the attack not prove fatal at the time, and should it not be followed by palsy, still the utmost caution is requisite to prevent a recurrence of the disease. It is scarcely necessary to insist on the strictest adherence to temperance, both as to meat and to drink; and the importance of daily exercise, when the attack is over; and indeed for the remainder of life. Prolonged study and intense thinking must be given up; the violent and exciting passions should be subdued; and even the pleasurable moderated.

Inflammation of the brain is one of those diseases which require, as observed respecting Apoplexy, the most energetic treatment. When convalescence has fortunately been established, the attention of the physician is still requisite, during several weeks, until complete recovery be fully confirmed; for the brain, after suffering from inflammation, is very apt to relapse into the same state, from the excitement of too full a meal, or over-exercise, or even slight mental exertions or emotions. On this account, the convalescent must be kept perfectly quiet, and completely free from the smallest excitement; and the strictest regimen observed. His diet should not only be mild and unstimulating, but small in quantity.

Inflammation of the eyes requires the same caution when convalescence is secured as other inflammatory affections; namely, quiet, great moderation in diet, and avoiding exposure either to much light, heat, or cold, or whatever can stimulate the still highly excitable organ.

Affections of the Chest.

Inflammation of the Lungs (*Pneumonia*). — In convalescence from this disease, the temperature of the room in which the patient sits should not exceed 60° F.; and it should be free from currents of air; but, at the same time, it should not be close. The necessity for continuing the same elevated position of the shoulders when in bed, which is demanded during the existence of the disease, remains even when the convalescence is advanced. The patient should be prevented from talking, and from exerting any muscular motion that can accelerate the circulation. The diet should be of that description which will support the strength without exciting or producing repletion. As the convalescence advances, and exercise is permitted by the medical attendant, it should be regular, but not hurried nor violent; and evening air should be sedulously avoided.

Pleurisy. — Inflammation of the lining membrane of the chest requires the same attention to diet and regimen during convalescence

as the last-mentioned disease, except that a greater strictness with regard to abstemiousness in food is requisite; the least deviation being likely to bring on a renewal of the inflammation. When the disease assumes a chronic character, and when the object is to remove fluid effused into the cavity of the chest, and pressing upon the lungs so as to circumscribe their action, the same degree of strictness with respect to diet is not necessary; but, as in this condition of the habit the physician must continue his attendance, the regulation of the diet devolves upon him.

Angina. — In that condition of the habit which is connected with a predisposition to gout, but in which, instead of a regular paroxysm, the heart and the pulmonary organs become affected, and the disease assumes that form which has been denominated diaphragmatic gout (*Angina pectoris*), the regulation of diet is of vital importance; and it should be of as low a standard as the constitutional powers will admit. It should not be of a description either to nourish much, or to augment or to cause fulness of habit: mild animal food, in moderate quantity, may be allowed; but the staple should be of a farinaceous kind; every stimulant, whether solid or fluid, should be avoided; and wine and malt liquors regarded as poisons. The invalid himself should be made aware, that whatever tends to excite or to hurry the circulation is calculated to bring on a paroxysm; nor is it sufficient that he avoids all stimulating viands and beverages; he should also be instructed that the same deleterious effects are likely to follow a full meal, even of the most proper and mildest food.

The same attention to diet, both as regards quantity and quality, is essential in *palpitations* depending on organic disease of the heart.

Asthma. — In no affection of the chest is attention to diet so important as in *asthma*. Sir John Floyer, who himself suffered from the disease, recommends almost a degree of abstinence; which is correct in reference to quantity; but the diet, although of a light, yet should be of a solid, kind. This is especially necessary, when dyspepsia is present to aggravate and excite the disease of the lungs.

In Hooping-cough, the diet, whether the patient be an adult or a child, should be of the mildest description; and, perhaps, no nutriment is so well adapted to support the tone of the body, without exciting it, as milk. In infancy, nothing but the breast should be given; the system of the nurse, at the same time, being kept as cool as possible by mild diet, and her mind in a tranquil state. If convulsions occur, these sometimes depend on the nature of the milk; in which case the nurse should be changed. It is still customary with non-professional persons to consider change of air essential in hooping-cough; but it is only after the malady has run its course, and convalescence is progressing, when the cough remains as a habit, that change of air is really beneficial. It is unnecessary to combat the absurd opinion, that a change even to a worse air is salutary.

Affections of the Stomach and Bowels.

ALTHOUGH *acute inflammation of the stomach* rarely occurs, yet there is a chronic form of that disease, in which, during its actual existence, and also in convalescence from it, much of the safety of the invalid depends upon domestic management. Every source of excitement should be avoided; the sick-room should be airy, and its temperature that of summer. The food should be of the blandest kind, given cold, or iced, and in small quantity: even when the convalescence is established, the diet should consist of farinaceous matters, mixed with small quantities of beef-tea, or weak broths; and this severe diet should be persisted in for a considerable time after recovery.

Enteritis. — When inflammatory action extends to, or exclusively exists in, the mucous lining of the bowels, constituting this disease, the diet, during the early stage of it, should be confined to cold water, or iced almond-emulsion; after which, milk and barley-water, or weak chicken or veal-tea, may be given in small quantities; namely, two or three tablespoonfuls, at intervals of three or four hours. Nothing stronger should be ventured upon, unless expressly ordered by the medical attendant.

Atonic Dyspepsia, or *simple indigestion.* — During the attack, abstinence, to a certain degree, is necessary; but, if this is not essential, the diet should be somewhat stimulant, but simple; namely, a small cup of moderately strong coffee, with little sugar or milk; or beef-tea, with a small quantity of dry toast; and, as the stomach begins to retain its tone, a little animal food of easy digestion, such as mutton or poultry.

During the intervals of the paroxysms of indigestion, attention to diet is of the first importance. As a general rule, the patient should be confined to a spare animal diet, with a moderate share of *well-boiled* vegetables, and a considerable restriction with respect to the use of fluids.

Dysentery, which implies inflammation, acute or chronic, of the same membrane as in *enteritis*, but confined to the larger and lower bowels, requires the diet to consist of the mildest farinaceous matters, strictly avoiding all solid animal food. It should be given in small quantity at a time, and the whole allowance for the day should be moderate. The farinaceous food should not be either solid, nor yet altogether fluid; the former may prove injurious as a mechanical irritant; the latter is apt to excite griping, from the extrication of much flatus.

Diarrhœa. — Much of the domestic, as well as the medical management of diarrhœa depends on the nature of the attack, and its causes; but too much attention cannot be paid to the regulation of the diet. It should be both small in quantity, and mild in quality. In the early stage, and the acute form of the disease, barley-water, arrow-root, made with water, rice or grit gruel, and light broths, are proper. In

chronic diarrhœa, rice, properly boiled, and mixed with a small quantity of beef-tea, forms an excellent diet, as it nourishes moderately, and leaves scarcely any feculent matter behind it.

In Cholera, convalescence is often tedious; and nothing is so likely to cause relapse as even slight irregularities of diet. For weeks after the feverish symptoms have disappeared, the diet should consist of a very moderate quantity of vegetable matter only. The feet should be kept especially warm, and the whole body clothed in flannel, to prevent that irregular distribution of blood which so strongly characterizes the disease.

After inflammation of the lining membrane of the cavity of the belly (*peritonitis*) has been subdued, the invalid should still observe the strictest diet and regimen. He should return very gradually to the use of animal food and wine. The bowels should be moderately and daily opened, the feet kept warm, and the skin maintained in a healthy condition by wearing flannel next to it, for a very considerable time after every trace of the disease has disappeared.

Diseases of the Liver.—In all cases of recovery from these diseases, whether inflammatory or otherwise, every precaution should be taken to guard against the deleterious influence of alternations of temperature and also of damp, by clothing in flannel next the skin. Errors in diet should be avoided; and fermented liquors and stimulating beverage of every kind, refrained from. When pains of the side continue, after all the other symptoms of the disease have disappeared, the introduction of a seton, if prescribed, should not be objected to; as the greatest benefit has often followed that mode of counter irritation.

COOKERY FOR THE SICK-ROOM.

It was said by the distinguished Dr. Rush, in his lectures before his class, that a physician ought to spend six months in a kitchen before beginning practice. A knowledge of dietetic preparations fitted for the sick, and for those recovering from disease, however apparently unimportant, adds much to a physician's power over his patient, and to his popularity and usefulness.

In giving nourishment to the sick, who are suffering from low diseases, it is an important rule which should never be forgotten, *to give but little at a time, and to repeat that often.* In cases of great prostration from disease, life may at times be endangered by a delay in giving nourishment of even a few minutes beyond the proper time.

Barley-Water.

Pearl barley, two ounces; boiling water, two quarts. Boil to one half, and strain. A little lemon juice and sugar may be added, if desirable. To be taken freely in inflammatory diseases.

Rice-Water.

Rice, two ounces; water, two quarts. Boil an hour and a half, and add sugar and nutmeg.

Rice, when boiled for a considerable time, becomes a kind of jelly, and, mixed with milk, is a very excellent diet for children. It has in some measure a constipating property, which may be increased by boiling the milk.

Decoction of Bran.

New wheat bran, one pint; water, three quarts. Boil down one third, strain off the liquor, and add sugar, honey, or molasses, according to the taste of the patient. A bran tea may be made by using boiling water, and suffering the mixture to stand in a covered vessel for three or four hours.

Sage Tea.

Dried leaves of sage, half an ounce; boiling water, one quart. Infuse for half an hour, and strain. Add sugar and lemon juice as

required by the patient. Balm and other teas are made in the same manner.

The above infusions form agreeable and useful drinks in fevers, and their diaphoretic powers may be increased by adding a little sweet spirits of nitre.

Barley Coffee.

Roast one pint of common barley in the same way in which coffee is roasted. Add two large spoonfuls of this to a quart of boiling water; boil five minutes. Add a little sugar.

Lemon-Water.

Put two slices of lemon, thinly pared, into a teapot, a little bit of the peel and a bit of sugar. Pour in a pint of boiling water, and cover it close two hours.

A Refreshing Drink in Fevers.

Put a little sage, two sprigs of balm, and a little sorrel into a stone jug, having first washed and dried them. Peel thin a small lemon, slice it, and put a small piece of the peel in; then pour in three pints of boiling water. Sweeten, and cover it close.

Another.

Boil an ounce and a half of tamarinds, three ounces of cranberries, and two ounces of stoned raisins, in three pints of water, till the water is reduced to two pints. Strain, and add a bit of lemon peel, which must be removed in an hour, as it gives a bitter taste if left too long.

A Very Pleasant Drink.

Put a teacupful of cranberries into a cup of water, and mash them. In the mean time, boil two quarts of water with one large spoonful of corn or oat meal and a bit of lemon peel; then add the cranberries. As much fine sugar as shall leave a smart flavor of the fruit, and a wineglassful of sherry. Boil the whole gently for fifteen minutes, and strain.

Crust Coffee.

Toast slowly one or two slices of brown or white bread, pour boiling water over it, and drink hot or cold, according to preference.

Infusion of Malt.

To one pint of ground malt add three pints of scalding water, that is, water not quite brought to the boiling point; infuse two hours,

and strain. Add sugar or lemon juice as desired. An excellent preparation in inflammatory fevers.

Lemonade.

Fresh lemon juice, four ounces; thin peel of lemon, half an ounce; white sugar, four ounces; boiling water, three pints. Let them stand until cold, and strain. When used in fevers, a little nitrate of potash or sweet spirits of nitre may be added. It may be further diluted to the taste of the patient.

Water Gruel.

Oat or corn meal, two tablespoonfuls; water, one quart. Boil for ten or fifteen minutes, and strain, adding salt, and sugar if desired by the patient.

Milk for Infants.

Cows' milk, one part; water, two parts; sweeten slightly with loaf sugar.

It is necessary when children are to be raised by hand to dilute the milk. The above proportions may be altered as the child advances in age.

Rice Gruel.

Ground rice, one heaping tablespoonful; ground cinnamon, one teaspoonful; water, one quart. Boil gently for twenty minutes, adding the cinnamon near the conclusion. Strain and sweeten. Wine may be added in some cases.

Panada.

White bread, one ounce; ground cinnamon, one teaspoonful; water, one pint. Boil them until well mixed, and add a little sugar and nutmeg. Wine or butter may also be added, if desirable.

Compound Salep Powders.

Salep, tragacanth, and sago, each four ounces; cochineal, half a dram; prepared oyster shells, one ounce. Mix, and divide into powders of one dram each. Stir one of these powders into a pint of milk, and boil for ten or fifteen minutes. To be drunk freely in diarrhœa and dysentery.

Another.

Gum arabic, tragacanth, maranta, sago, tapioca, each two drams. Mix them well together, and boil in a pint of milk, flavored with nutmeg or cinnamon. To be used as a diet in dysentery, diarrhœa, etc.

Sago Gruel.

Sago, two tablespoonfuls; water, one pint. Boil gently until it thickens, frequently stirring. Wine, sugar, and nutmeg, may be added, according to circumstances.

Arrow-Root Gruel.

Arrow-root, one tablespoonful; sweet milk, half a pint; boiling water, half a pint. To be sweetened with loaf sugar. Excellent aliment for children when the bowels are irritable.

Tapioca Jelly.

Tapioca, two tablespoonfuls; water, one pint. Boil gently for an hour, or until it assumes a jelly-like appearance. Add sugar, wine, and nutmeg, with lemon juice to suit the taste of the patient, and the nature of the case.

Jelly of Irish Moss.

Irish moss, half an ounce; fresh milk, a pint and a half. Boil down to a pint. Remove any sediment by straining, and add the proper quantity of sugar and lemon juice, or peach water, to give it an agreeable flavor.

Isinglass Jelly.

Isinglass, one roll. Boil in one pint of water until it is dissolved. Strain, and add one pint of sweet milk. Put it again over the fire, and let it just boil up. Sweeten with loaf sugar, and grate nutmeg upon it. When properly made, it resembles custard.

This forms an excellent diet for persons recovering from sickness, and is well adapted to the bowel complaints of children.

Apple Water.

Cut two large apples in slices, and pour a quart of boiling water on them. Or, pour the same amount of water on roasted apples. In two or three hours, strain and sweeten slightly.

Milk Porridge.

Wheat flour, corn meal, or oatmeal, two tablespoonfuls; milk, one pint; water, one pint. Mix the flour or meal with cold water, to form a thin paste; put the milk and water over the fire, and when they come to the boiling point, add the paste, carefully stirring.

French Milk Porridge.

Stir some oatmeal and water together; let the mixture stand to clear, and pour off the water. Then put more water to the meal, stir it well, and let it stand till the next day. Strain through a fine sieve, and boil the water, adding milk while so doing. The proportion of water must be small. With toast, this is a good preparation for weak persons.

Ground-Rice Milk.

Boil one spoonful of good rice, rubbed down smooth, with a pint and a half of milk, a little cinnamon, lemon peel, and nutmeg. Sweeten when nearly done.

Boiled Flour.

Tie up as tight as possible, in a linen cloth, one pound of flour; and, after frequently dipping it in cold water, dredge the outside with flour till a crust is formed round it, which will prevent the water from soaking into it while boiling. Place it in water and boil until it becomes a hard, dry mass.

Two or three spoonfuls of this may be grated, and prepared in the same manner as arrow-root gruel, for which it is an excellent substitute.

Vegetable Soup.

Take one turnip, one potatoe, and one onion, let them be sliced and boiled in one quart of water for an hour. Add as much salt as is agreeable, and pour the whole upon a piece of dry toast.

This forms an agreeable substitute for animal food, and may be given when the latter is inadmissible.

Beef Tea.

Lean beef, cut into shreds, one pound; water, one quart. Boil for twenty minutes, taking off the scum as it rises. When it grows cold, strain.

Essence of Beef.

Lean beef sliced. Put a sufficient quantity into a porter bottle to fill up its body, cork it *loosely*, and place it in a pot of cold water, attaching the neck, by means of a string, to the handle of the vessel. Boil this for an hour and a half or two hours; then pour off the liquor and skim it.

To this preparation may be added spices, salt, wine, brandy, etc., according to the taste of the patient, and nature of the disease.

Calf's-feet Jelly.

Take two calf's feet, and add to them one gallon of water. Boil down to one quart. Strain, and when cold, skim off the fat. Add to this the white of six or eight eggs well beaten, a pint of wine, half a pound of loaf sugar, and the juice of four lemons, and let them be well mixed. Boil the whole for a few minutes, stirring constantly, and then pass it through a flannel strainer.

This forms a very nutritious article of diet for the sick, and for those recovering from disease. The wine may be omitted or added, according to choice.

Chicken Water.

Take half a chicken, divested of all fat, and break the bones; add to this half a gallon of water, and boil for half an hour. Season with salt.

Suet Ptisan.

Sheep's suet, two ounces; milk, one pint; starch, half an ounce. Boil slowly for half an hour. This may be used as a common drink in dysentery.

Rennet Whey.

New milk, one quart; rennet, a large spoonful. Heat the milk, and then add the rennet. Boil until the curd separates, which is to be taken off. To many persons, this forms an agreeable nutriment.

Vinegar Whey.

Milk, one pint; vinegar, one tablespoonful. Boil for a few minutes, and separate the curd.

Tartar Whey.

Milk, one quart; cream of tartar, one dessert spoonful. Boil, and separate the curd.

Mustard Whey.

Bruised mustard-seed, one tablespoonful; milk, one pint. Boil together for a few minutes, and separate the curd.

This has been found a useful drink in dropsy. A teacupful may be taken at a time.

Alum Whey.

Alum, one teaspoonful; milk, one pint. Boil together, and strain, to separate the curd.

Orange Whey.

Milk, one pint; the juice of an orange with a portion of the peel. Boil the milk; then put the orange to it, and let it stand till coagulation takes place. Strain.

Sweet Whey.

Skimmed milk, two quarts; a piece of prepared calf's rennet. Mix, and put in a warm place till coagulation takes place; then strain.

Whey with Tamarinds.

Milk, boiling, one pint; tamarinds, two ounces. Boil them together till coagulation takes place.

Wine Whey.

Milk, two thirds of a pint; water, one third of a pint; Madeira, or other wine, one gill; sugar, one dessert spoonful. Place the milk and water together in a deep pan on the fire, and at the moment when it begins to boil, pour in the wine and the sugar, stirring assiduously whilst it boils, for twelve or fifteen minutes. Lastly, strain through a sieve. This is excellent in all forms of fever, given in small quantities. It may be drunk either cold or tepid, a wineglassful at a time.

Milk and Soda Water.

Heat nearly to boiling, a teacupful of milk; dissolve in it, a teaspoonful of refined sugar; put this into a large tumbler, and fill with soda water. This is an excellent mode of taking milk when the stomach is charged with acid, and is oppressed by milk alone.

Sippets.

On an extremely hot plate, put two or three slices of bread, and pour over them some of the juices of boiled beef, mutton, or veal, if there be no butter in the dish. Sprinkle over them a little salt.

Restorative.

Take two calf's feet, one quart of water, and one quart of new milk; place all in a close-covered jar, and bake three hours and a half. When cold, remove the fat. Any desired flavor may be given, by adding lemon-peel, cinnamon, or mace, while baking. Add sugar afterwards.

Coffee Milk.

Boil a dessertspoonful of ground coffee in nearly a pint of milk, for a quarter of an hour, then put into it a shaving of isinglass, and clear it. Let it boil a few minutes, and set it beside the fire to clarify. Sweeten with loaf sugar.

Nutritive Fluid.

Take two teaspoonfuls of lump magnesia, one teaspoonful of saleratus, one teaspoonful of salt, two teaspoonfuls of flour, half a pint of milk, and one pint of water. Put the milk and water united over the fire, and rub up the flour with a little cold water to make a thin paste. Just when the milk and water begin to boil, stir in the paste. This will make a thin porridge, which should boil about five minutes. At the end of this time, remove from the fire, and pour into a pitcher. Now add the magnesia, pulverized, and mixed with the saleratus and salt. Sweeten to suit the taste.

This may be drank freely, several times a day, so as to produce two evacuations of the bowels in twenty-four hours, in those cases of dyspepsia attended by acidity of the stomach, and in many debilitated conditions of the system in which there is a tendency to loss of flesh.

This is one of the leading fluids used by those who pursue what is called the "*Nutritive System*" of treating disease, and is really a valuable preparation, having the effect often to increase the flesh, even while it acts as a cathartic.

MEDICINES AND THEIR PREPARATIONS.

Materia Medica.

That department of medicine which treats of remedies, their doses, modes of using, and influences upon the constitution, is called materia medica. The agents employed in the treatment of disease are taken from three kingdoms of nature, — the vegetable, the animal, and the mineral.

The largest portion of medicinal substances are taken from the vegetable world. They consist of leaves, flowers, seeds, barks, and roots. These lose much or all of their medicinal powers unless gathered at the right seasons of the year, and are properly cured. The different parts of a plant are to be gathered when their peculiar juices are most abundant in them.

The Roots of Annual Plants are best supplied with their juices before they are in flower; they should be gathered at this time.

The Roots of Biennial Plants should be gathered in the autumn, after their first year's growth.

The Roots of Perennial Plants should be gathered in the spring, before vegetation has begun.

Before they are dried, the solid parts of these roots are to be cut in slices, after being washed, and the small fibres, unless they are the parts used, are to be thrown away.

Bulbous Roots are to be gathered at the time their leaves decay. Their outer covering being rejected, they must be sliced, strung upon threads, and hung in a warm, airy room to dry. After being dried, roots should be packed in barrels or boxes, and kept as free as possible from moisture.

Barks, whether of the roots, trunk, or branches, must be gathered in autumn, or early in the spring, when they peel off most easily, and the dead outside and all rotten parts being separated, they must be dried in the same manner as roots. The most active barks are generally from young trees.

Leaves are to be gathered when they are full grown, and just before the fading of the flower.

Those of biennial plants are not to be collected until the second year. For drying, they should be thinly spread on the floor of a room through which a current of air passes. For preservation, they should be packed in vessels, and kept free from moisture, and insects.

Flowers must generally be collected about the time of their opening, — either a little before, or just after.

They should be dried as rapidly as possible, but not in the sun, and may be packed away in the same manner as leaves.

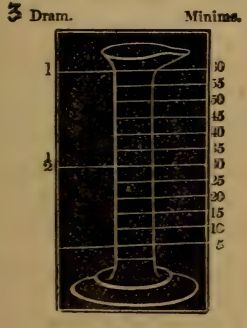
Fruits, Berries, etc., may be spread thinly upon the floor, or hung up in bunches to dry.

Articles to Accompany a Medicine Chest.

As the author intends to prepare a Medicine Chest to accompany this volume, it is well to mention the following articles as necessary to be had with it:

1. A Spatula for mixing ointments and pills, and for spreading plasters.
2. A piece of smooth marble on which the above articles may be mixed, divided, and spread.
3. A glass funnel.
4. A domestic syringe for injections.
5. Adhesive or sticking plaster.
6. Lint.
7. Scales and weights.
8. A glass or wedgewood mortar and pestle.
9. A graduated wineglass for measuring teaspoonfuls and tablespoonfuls of liquids.
10. A minim graduated measure.
11. A two-ounce graduated measure.

FIG. 186.



MINIM MEASURE

FIG. 187.

TWO-OUNCE MEASURE.

The minim measure is represented by Fig. 186, and contains one fluid dram, or sixty minims, which is divided by twelve lines, — each line representing five minims. A minim is considered about equal to one and a half drops.

The two ounce measure is represented by Fig. 187, and is divided off from half a dram upward.

Doses, Weights, etc.

Apothecary's weights, by which all medicinal preparations ought to be weighed, are divided into pounds, ounces, scruples, drams, and grains.

The characters marked on weights and graduated measures, are explained as follows:

℥j one ounce.	fʒj one fluid dram
f℥j one fluid ounce.	ʒss half a dram.
℥ss half an ounce.	℈j one scruple.
ʒj one dram.	℈ss half a scruple.

The grain weights are stamped with punch marks.

20 grains make one scruple.	60 drops make one fluid-dram.
3 scruples make one dram.	8 drams make one fluid-ounce.
8 drams make one ounce.	16 ounces make one pint.

By apothecary's weight:

℔	The pound is equal to 12 ounces.	ʒ	The dram is equal to 3 scruples.
℥	" ounce " 8 drams.	℈	" scruple " 20 grains.

By apothecary's measure:

O The pint is equal to sixteen ounces.
ʒ " dram " ninety drops, or sixty minims.

The marks and words used by physicians and apothecaries may be a little more fully explained by the following table:

℞ stands for *recipe*, and means *take*.
āā stand for *ana*, and mean *of each*.
℔ stands for *libra vel libræ*, and means a pound or pounds.
℥ stands for uncia vel unciæ, and means an ounce or ounces.
ʒ stands for *drachma vel drachmæ*, and means a dram or drams.
℈ stands for *scrupulus vel scrupuli*, and means a scruple or scruples.
O stands for *octarius vel octarii*, and means a pint or pints.
f℥ stands for *fluiduncia vel fluiduncia*, and means a fluid ounce or fluid ounces.
fʒ stands for *fluidrachma vel fluidrachmæ*, and means a fluid drachm or fluid drachms.
m stands for *minimum vel minima*, and means a minim or minims.
Chart. stands for *chartula vel chartulæ*, and means a small paper or papers.
Coch. stands for *cochlear vel cochlearia*, and means a spoonful or spoonfuls.
Collyr. stands for *collyrium*, and means an eye-water.
Cong. stands for *congius vel congii*, and means a gallon or gallons.
Decoct. stands for *decoctum*, and means a decoction.
Ft. stands for *fiat*, and means make.

Garg. stands for *gargarysma*, and means a gargle.
Gr. stands for *granum vel grana*, and means a grain or grains.
Gtt. stands for *gutta vel guttæ*, and means a drop or drops.
Haust. stands for *haustus*, and means a draught.
Infus. stands for *infusum*, and means an infusion.
M. stands for *misce*, and means mix.
Mass. stands for *massa*, and means a mass.
Mist. stands for *mistura*, and means a mixture.
Pil. stands for *pilula vel pilulæ*, and means a pill or pills.
Pulv. stands for *pulves vel pulveres*, and means a powder or powders.
Q. S. stands for *quantum sufficit*, and means a sufficient quantity.
S. stands for *signa*, and means write.
Ss. stands for *semis*, and means a half.

Domestic, or Approximate Measures.— A tablespoon contains about four drams; a teaspoon, one dram; a dessertspoon, three drams; a wineglass, two ounces. Spoons vary so much in size, that they should not be used as measures in giving powerful medicines.

The Approximate Value of French Decimal Weights.

One centigramme is equal to		$\frac{1}{4}$ grain.
Two centigrammes	"	$\frac{1}{2}$ grain.
One demi-decigramme	"	1 grain.
One decigramme	"	2 grains.
One gramme	"	18 grains.
One gramme and three decigrammes is equal to		1 scruple.
Two grammes	"	$\frac{1}{2}$ drachm.
Four grammes	"	1 drachm.
One decagramme is equal to	2 drachms and	36 grains.
Three decagrammes and two grammes is equal to		1 ounce.
Demi-kilogramme	"	1 pound.
Kilogramme	"	2 pounds.

At Paris, the scruple is equal to 24 grains; the drachm, to 72 grains.

Everywhere else, the scruple is equal to 20 grains; and the drachm, to 60 grains.

The following table shows the relative doses for young people of different ages:

The dose for a person of middle age being						1 or 1 drachm.
That of a person from	14	to	21	years	will be	$\frac{2}{3}$ or 2 scruples.
" " "	7	to	14	"	"	$\frac{1}{2}$ or $\frac{1}{2}$ drachm.
" " "	4	to	7	"	"	$\frac{1}{3}$ or 1 scruple.
" " of	4			"	"	$\frac{1}{4}$ or 15 grains.
" " "	3			"	"	$\frac{1}{6}$ or 10 grains.
" " "	2			"	"	$\frac{1}{8}$ or 8 grains.
" " "	1			"	"	$\frac{1}{12}$ or 5 grains.

In administering medicines, it is always well to begin with the smallest dose mentioned and gradually increase until the desired influence is produced.

Tinctures.

The preparations called tinctures are made by grinding or bruising the roots, leaves, or barks used, to a coarse powder, placing it in the proper amount of either alcohol or diluted alcohol, letting it stand from seven to fourteen days,—shaking each day,—and, finally, filtering through paper. A large proportion of tinctures are made by taking *one ounce* of the medicinal substance to *one pint* of the spirit; and whenever tinctures are spoken of in this Materia Medica, and the quantities are not named, the above proportions are to be presumed. When a larger proportion of the medicine is to be used, I shall simply indicate the proportions in the fewest words, as under "Black Cohosh, —this tincture, four ounces to the pint of alcohol," meaning thereby, that the tincture is made by using four ounces of the root to the pint of alcohol. Tilden & Co.'s fluid extracts, which are the most reliable of any with which I am acquainted, have the same strength, ounce for ounce, with the roots, barks, leaves, etc., of which they are made. Tinctures may therefore be made with very little trouble, by substituting, in each case, the same number of ounces of their fluid extracts to the pint of alcohol, which I name of the gross substance, or, when no quantity is named, *one ounce* to the pint.

Infusions.

Infusions are solutions of vegetable medicines, generally obtained by pouring boiling water upon the substance, and letting it stand till it cools. When a more prolonged application of heat is desired, the vessel may stand for a while by the fire, but must not be permitted to boil. The vessel should usually be covered.

As in the case of tinctures, I have uniformly, while writing this Materia Medica, briefly named the quantity to be used to the pint, whenever it *varies* from *one ounce.*

Acetic Acid.— This is a clear liquid, without color, and has a strong, sour taste, and an agreeable smell. When held to the nose, its fine, pungent odor often relieves headache. A piece of cambric wetted with it and applied to the skin, excites heat and redness, and, very soon, a blister,—for which this acid may be substituted in inflammatory sore throat, and other cases requiring speedy action. Applied to corns and warts, with a camel's-hair brush, it destroys them. One part to seven of water, makes a good vinegar.

Citric Acid.— This acid is extracted from lemon, or lime juice; it is also present in the cranberry, currant, strawberry, raspberry, tamarind, and is very abundant in the red elderberry. It is refrigerant, and antiseptic, and is chiefly employed as a substitute for lemonade. Nine and a half drams of the crystals, two drops of oil of lemon, and one pint of water, answers a good purpose, in place of lemon-juice.

Diluted Nitric Acid.— This, in the undiluted state, passes under the

name of aqua-fortis. It is tonic and antiseptic. Largely diluted with water, it forms a good drink in fevers, especially typhus. Taken in large doses, it is a powerful poison. One dram of this preparation, thirteen ounces of soft water, and one ounce of simple syrup, make a good drink in fevers, of which half a wineglass to a wineglassful is a dose. Excellent in cases of hooping-cough.

Nitro-Muriatic Acid. — This acid, when properly diluted, has a tonic and stimulant influence. It is much used as a foot-bath in affections of the liver, and in deficient secretions of the bile.

Diluted Hydrochloric Acid. — This is known by the name of diluted muriatic acid. It is tonic, antiseptic, and diuretic, and is used in typhus, eruptions of the skin, and with other articles, as a gargle in inflammatory and putrid sore throats. Dose, from five to twenty drops, in a wineglassful of water. It is given in scarlet and typhoid fevers, about twenty drops being put into a bowl of barley-water or gruel.

Diluted Hydrocyanic Acid. — This is commonly known by the name of prussic acid. It is sedative and antispasmodic, and is useful in spasmodic coughs, asthma, hooping cough, nervous affections, hiccough, palpitation of the heart, irritable stomach, and dyspepsia. Dose, from two to five drops, in a glass of water or tea of Peruvian bark.

Diluted Sulphuric Acid. — This acid, known by the name of diluted oil of vitriol, is tonic, antiseptic, refrigerant, and astringent. It is useful in dyspepsia, diabetes, menorrhagia, hæmoptysis, eruptions of the skin, hectic, and diarrhœa. It is often given with some bitter infusions, as cascarilla, columbo, peruvian bark, or quassia. The aromatic sulphuric acid is often used in place of it, being sometimes considered more grateful to the taste. Dose of each, from five to fifteen drops.

Tannic Acid. — This is an astringent preparation, and passes under the name of tannin. It is prepared from galls. It is used in diarrhœa, dysentery, passive hemorrhages, and diabetes. Dose of the powder, from one to five grains.

Tartaric Acid. — This is refrigerant and antiseptic, and is used in inflammatory affections, fevers, and scurvy. It is much used in preparing what is called lemon syrup, and forms an agreeable and healthful drink.

Alcohol. — Alcohol is the result of the fermentation of the juices of many vegetables. It is the intoxicating constituent in whiskey, rum, brandy, gin, wines, porter, ale, beer, and cider. Its principal use in medicine is in the preparation of tinctures, essences, and extracts. One part of pure alcohol, to one part of water, forms the diluted alcohol of the shops.

Almonds. — The *Amygdalus Communis*, or almond tree, grows in the south of Europe and Asia, and yields the sweet and bitter almond.

The oil of the sweet almond is used as a demulcent, in coughs, etc. A dose is a teaspoonful. The oil of the bitter almond is poisonous, and is occasionally used as a valuable sedative. Its taste is like that of a peach kernel. Dose, from a quarter of a drop to a drop. It owes its poisonous properties to hydrocyanic acid. Cakes, etc., are sometimes flavored with an essence prepared from it.

Aloes. — This is the hardened juice of the leaves of several species of the aloe tree, in North and South Africa, in the south of Europe, and in the island of Socotra. Aloes is purgative, acting chiefly upon the rectum, or lower bowel, in which it frequently produces irritation, and is apt to aggravate and induce piles. It is much used to excite the flow of the menses, and should never be given to women during pregnancy. It produces griping of the bowels, which may be diminished by combining it with soap, or carbonate of potash.

Alum (*Alumen*). — The chemical name of this is sulphate of alumina and potassa. In ordinary doses, alum is astringent and antispasmodic. In large doses it is purgative and emetic, and is used both externally and internally. It is often used in solution as a gargle in sore throat, and falling down of the uvula, and as an injection in leucorrhœa. In doses of thirty or forty grains, it acts as a purgative, and used in this way, is useful in painter's colic. When exposed to heat in a vessel till it ceases to boil, it becomes dry, and is then called burnt alum, which, when pulverized, is applied with advantage to canker spots in the mouth, and to proud flesh.

American Hellebore (*Veratrum Viride*). — This plant grows in many parts of the United States, usually in swamps, wet meadows, and on the banks of mountain streamlets. The root is the part used. It is slightly acrid, alterative in a marked degree, very decidedly and actively expectorant and diaphoretic, and it is an excellent nervine, though not narcotic. But its most marked and valuable quality — that in which it has no rival — is its sedative action upon the circulation. In suitable doses, it can be relied upon to bring the pulse down from a hundred and fifty beats in a minute to forty, or even to thirty. In fevers, therefore, in some diseases of the heart, in acute rheumatism, and in many other conditions which involve an excited state of the circulation, it is an article of exceedingly great value, because it is always reliable. It has recently come into use; and I doubt whether so valuable a contribution has been made to our list of medicines in a hundred years.

Preparations. — Veratrum is used chiefly in the form of tincture, six ounces to the pint of diluted alcohol, or of fluid extract. The dose of each of these preparations, for a grown person, is three or four drops, every hour or two, in a little sweetened water, and gradually increased, if necessary, till the pulse comes down to sixty or seventy. If taken in so large a dose as to produce vomiting, or too much depression, a full dose of morphine or laudanum, in a little brandy or ginger, is a complete antidote.

Veratrin, the active principle of veratrum, is also used, in doses of one-half to one-third of a grain.

American Ipecacuanha (*Euphorbia Ipecac*). — This plant is perennial, and grows in sandy soils in the Middle and Southern States. When cut or broken it gives out a milky juice. The root is the medicinal part. It is emetic, cathartic, and diaphoretic. Dose, as a cathartic, ten or twelve grains; as a diaphoretic, three or four grains, every three or four hours.

American Ivy (*Ampelopsis Quinquefolia*). — This vine grows in all parts of the United States. It is known by the names of *false grape*, and *wild woodbine*. It is alterative, tonic, astringent, and expectorant. Used in scrofula and syphilis.

Water of Ammonia (*Liquor Ammoniæ*). — This preparation, called hartshorn, or spirits of hartshorn, is formed by the union of water with ammonia gas. It has a powerful ammoniacal odor, and an alkaline, caustic taste. Taken internally it is stimulant, sudorific, and antacid, and applied externally, it is rubefacient. It stimulates particularly the heart and arteries, without very much exciting the brain. It is an excellent remedy in heartburn, and for sick headache, dependent on sourness of the stomach. A dose is from ten to thirty drops, largely diluted with water. United with oils, or with alcohol in about equal proportions, and applied externally, it reddens the skin, and, if the cloth wet with it be covered with oiled silk, or with flannel to prevent evaporation, it will sometimes quickly raise a blister. In cases of fainting, it is frequently applied to the nostrils, to excite the brain, and rouse the system.

Carbonate of Ammonia. — This is a white, moderately hard, crystalline salt, — having a pungent, ammoniacal smell, and a sharp, penetrating taste. When exposed to the air, it loses some of its ammonia, becomes a bicarbonate, and falls to powder. It is stimulant, diaphoretic, antispasmodic, powerfully antacid, and, in large doses, emetic. Internally, it is more often used than water of ammonia, and for similar purposes. Coarsely bruised, and scented with oil of lavender, it constitutes the common smelling salts, so much used in fainting and hysterics. For internal use, the dose is from five to twenty grains, taken in the form of pills, every two, three, or four hours.

Muriate of Ammonia (*Sal Ammoniac*). — This, also called hydrochlorate of ammonia, is a white, translucent, tough, fibrous salt, in large cakes, about two inches thick, convex on one side, and concave on the other.

It has a saline, pungent taste, but no smell, dissolves in one part of boiling water, and three parts of cold. Taken internally, it is stimulant and alterative. It is a valuable remedy in chronic bronchitis, pleurisy, and inflammation of the serous and mucous membranes generally. But it must only be used after the first violence of these inflammations has abated. Pulverized, and placed over a spirit lamp in a tin cup, the fumes which arise when it sublimes, may be inhaled five or ten minutes once or twice a day, with great advantage in chronic bronchitis, and in chronic inflammations generally of the

air passages. A solution composed of one ounce of the salt dissolved in nine fluid ounces of water, and one of alcohol, may be used as a wash, for bruises, indolent tumors, and ulcers.

Solution of Acetate of Ammonia (*Liquor Ammoniæ Acetatis*). — This is known by the common name of spirit of mindererus. The taste is saline, and is like that of a mixture of nitre and sugar. It is a valuable diaphoretic, and is much employed, alone or mixed with sweet spirit of nitre, two parts to one, in fevers and inflammations. It is a valuable external application in mumps, applied hot upon a piece of flannel. One ounce mixed with seven ounces of rose-water, and two drams of laudanum, forms a valuable wash for the eyes in chronic ophthalmia. The dose is from two drams to half a fluid ounce, mixed with sweetened water, every two or three hours.

Aromatic Spirit of Ammonia (*Spiritus Ammoniæ Aromaticus*). — Taken internally, this answers the same purpose of other preparations of ammonia, and is much used on account of its agreeable taste and smell. It is valuable as an antacid in sick headache. Dose, from thirty drops to a dram, sufficiently diluted with water.

Anise (*Pimpinella Anisum*). — This is a perennial plant, and grows in Egypt. Its fruit is called anise-seed. It is aromatic and carminative. It is much used to allay nausea, flatulency, and colic, particularly in children. It is frequently added to other medicines to make them more agreeable, and to lessen the griping effects of physic.

The oil extracted from the seeds, dissolved in alcohol, an ounce of the former to a pint of the latter, forms what is called the essence of anise. Dose of the essence, from thirty drops to a dram in sweetened water. Anise forms a very valuable addition to cough preparations.

Arnica (*Arnica Montana*). — This is a perennial plant, growing in moist, shady places in Siberia, etc. It is often called leopard's bane. It is much used externally as a stimulating application to bruises, local inflammation, etc.

Preparations. — It is chiefly used in the form of tincture, or fluid extract. Dose, ten to sixty drops. Half an ounce of tincture, five and a half ounces of boiling vinegar, and two drams of carbonate of ammonia, used warm, make in some cases a valuable fomentation. It is one of the leading homœopathic remedies.

Arrow-root. — This is prepared from the *Maranta Arundinacea*, a plant of the West Indies. It is chiefly used in forming dietetic preparations, and belongs to the first or saccharine group of food-articles (see page 66).

Assafœtida. — This is the hardened juice from the root of a Persian plant. It is stimulant, antispasmodic, and expectorant, and is much used in nervous complaints. A dose of the powder, is from five to ten grains, and of the tincture, made by macerating two ounces in a pint of diluted alcohol, from thirty to sixty drops.

Balm (*Melissa Officinalis*). — This is a perennial plant, growing in Europe and this country. It is moderately stimulant and diaphoretic.

The warm infusion causes perspiration, and is used to relieve painful menstruation.

Balm of Gilead (*Populus Candicans*). — This is a tree growing in the northern parts of our country. A tincture made from the buds, in doses of from one to four fluid drams, is useful in affections of the kidneys, in scurvy, and rheumatism. Steeped in lard they form a useful ointment for some purposes.

Balmony (*Chelone Glabra*). — This is a perennial plant, common to the United States. It is tonic, cathartic, and vermifuge. It is used in indigestion, debility, and derangements of the liver. A dose of the powdered leaves, is one dram; of the tincture, two fluid drams; of the decoction, one or two fluid ounces; of the active principle called chelonin, one to two grains. A decoction of balmony combined with tincture of assafœtida, forms a valuable injection for worms. An ointment made from the fresh leaves, is valuable for piles, inflamed breasts, tumors, and painful ulcers.

Balsam Copaiva. — This is obtained from a South American tree called the *Copaifera Officinalis*. It is a clear yellowish fluid, about the consistence of honey. It is a stimulating diuretic, and is much used in chronic gonorrhœa, gleet, irritable conditions of the bladder, and chronic bronchitis. In some persons it causes an eruption on the skin, with itching, etc.

In large doses, it acts as a cathartic.

Balsam Tolu. — This is the juice of the tree *Myrospernum Toluiferum*, growing in South America. It is soft, tenacious, and of a pale brown color; and, like balsam copaiva, is soluble in alcohol, ether, and volatile oils. It has been used in asthma, cough, bronchitis, etc. Dose from ten to thirty grains, in mucilage or syrup.

Barberry (*Berberis Vulgaris*). — This shrub grows along the Atlantic coast, from Canada to Virginia. The parts used are the bark and berries. It is tonic and laxative, and, in doses of a teaspoonful, powdered, is useful in jaundice, chronic diarrhœa, and chronic dysentery. A decoction of the berries forms an agreeable acid drink in fevers, cholera infantum, etc., and as a gargle, it is useful for ulcers of the mouth, etc., as a wash, for chronic inflammation of the eyes, and as an injection for leucorrhœa.

Bear-berry (*Uva ursi*). — This plant, also called upland cranberry has a wide range, being found in the northern parts of Asia, Europe, and America. It flowers from June to September, and ripens its berries in the winter. The leaves are the only medicinal parts. It is astringent and tonic, and acts particularly upon the urinary organs, for complaints of which it is particularly used. It is specially valued as an antilithic in gravel, and as a remedy for chronic inflammation of the kidneys, and ulceration of the bladder, etc.

Preparations. — Fluid extract, dose, one third of a dram to a dram; solid extract, dose, five to fifteen grains; tincture, dose, one to two ounces.

Bayberry (*Myrica Cerifera*). — This is found in damp places, in many parts of the United States, and is very abundant in New Jersey. The bark of the root is the part used. It is astringent and stimulant. Pulverized, and combined with powdered blood-root, it forms an excellent application to indolent ulcers. In the form of poultice, combined with powdered slippery elm, it is a useful application to scrofulous tumors or ulcers. The decoction is a good wash for sore mouth, and spongy, bleeding gums. It is chiefly used in the form of tincture, dose, half an ounce; fluid extract, dose, one to two drams: and the active principle myricin, dose, two to ten grains.

FIG. 188.

BEAR-BERRY.

FIG. 189.

BAYBERRY.

Beef's Galls (*Fel Bovinum*). — This being dried by evaporation, is sometimes used as a tonic, and laxative, in torpor of the liver, jaundice, indigestion, and costiveness, in doses of from one to ten grains. Three drams of ox gall, one dram of extract of conium, two drams of soda soap, and one ounce of sweet oil, make a valuable preparation, which, when applied externally, has a surprisingly rapid effect in reducing enlargement and hardening of the breasts, glandular tumors, particularly enlargement of the tonsils, and is useful in hypertrophies generally. For application to the tonsils, the gall may be rubbed up with water, to the consistence of an ointment, and may be applied with a camel's-hair brush.

Benzoin. — This is the hardened juice of a tree of Sumatra and Borneo. It is very brittle, of a reddish brown color, and is soluble in alcohol and ether. It is chiefly used for inhalation in chronic laryngitis and bronchitis. When used for this purpose, it may be added to boiling water, and the vapor be inhaled; or it may be burned upon coals, or a hot shovel, the fumes being inhaled.

Benzoic Acid. — This is prepared by heating benzoin, and causing it to sublime. It consists of silky, feathery crystals, which are white and soft. It has been found useful in the phosphatic variety of gravel. A convenient way of giving it is to unite one part of it with four parts of phosphate of soda, the dose of which is from ten to thirty grains.

Bethroot (*Trillium Pendulum*). — A perennial plant, growing in rich soils, in the Middle and Western States. The root is used, and is astringent, tonic, and antiseptic. It is useful in bleeding from the lungs and kidneys; also in excessive menstruation, cough, asthma, and difficult breathing. Boiled in milk, it is used, in the western country, in diarrhœa and dysentery.

Preparations. — Fluid extract, dose, one to three drams; trilliin, dose four to eight grains; infusion, dose, two to four ounces; decoction, used as a local application to ulcers and sore mouth, and as an injection in leucorrhœa and gleet. A poultice made from the root, is useful for carbuncles, indolent tumors, buboes, foul ulcers, and for stings of insects.

Bitter-root (*Apocynum Androsæmifolium*). — An indigenous plant, growing in rich soils in the United States and Canada. The root is the part used, and is laxative, tonic, diaphoretic, and alterative. It is employed in chronic affections of the liver, syphilis, scrofula, intermittents, and the low stage of typhoid fevers. Forty to sixty grains will cause vomiting without much nausea.

FIG. 190.

BITTER-ROOT.

Preparations. — Fluid extract, dose, as a tonic, ten to twenty drops; as a diaphoretic, fifteen to twenty-five drops; as an emetic, half a dram to a dram. Solid extract, dose, two to eight grains; apocynin, the active principle of the root, dose, half a grain to two grains; tincture, dose, two to three drams; infusion, dose, a wineglassful, three times a day.

Bismuth. — The principal preparation of this metal used in medicine, is the *trisnitrate of bismuth*, also called *nitrate*, *subnitrate*, and *white oxide of bismuth*. It is a white powder, without smell or taste. It is used for various irritable and painful affections of the stomach, when there is no acute inflammation. It is particularly useful in chronic diarrhœa, more especially the diarrhœa of the latter stages of consumption, — *over which it has more control than any other known remedy.* To show its best effects in this form of diarrhœa, it should be given in large doses, not less than twenty to thirty grains, immediately after each meal. The small doses usually given are comparatively useless. Given in these full doses, it is also almost a specific in heartburn and water-brash. The unpleasant symptoms spoken of in books, as arising from large doses, are fabulous.

Bittersweet (*Solanum Dulcamara*). — This is common in Europe and North America. It is a woody vine, the roots and stalks of which are used in medicine. It is slightly narcotic, and has alterative and diaphoretic properties. It is used in scaly and syphilitic affections of the skin. It is said to have antephrodisiac properties, and is serviceable in mania, connected with strong venereal propensities.

Preparations. — Fluid extract, dose, half a dram to a dram; solid

extract, dose, three to eight grains; infusion, dose, one to three ounces, three or four times a day.

Black Alder (*Prinos Verticillatus*). — This shrub is common in the United States; its bark and berries are used. It has been found useful in jaundice, diarrhœa, intermittent fever, and other diseases connected with debility. Applied locally in the form of a wash or poultice, and given internally, it is popular in chronic eruptions of the skin, and in flabby, ill-conditioned ulcers, and mortification.

Preparations. — Fluid extract, dose, two drams; tincture, dose, two to four drams.

Two drams of the fluid extract of black alder, one dram of the fluid extract of golden seal, and one pint of water, mixed, and taken in doses of four fluid ounces, three or four times a day, are valuable in dyspepsia.

Blackberry (*Rubus Villosus*). — There are many species of this growing in the United States. The bark of the root is the part used. It is tonic, and strongly astringent, and is a valuable remedy in diarrhœa, dysentery, cholera-infantum, relaxed condition of the bowels of children, and the passive discharge of blood from the stomach, bowels, and womb.

Preparations. — Fluid extract, dose, half a dram to a dram; solid extract, four to six grains; tincture, dose, two to four drams; infusion, dose, one ounce. This last preparation is also useful as an injection in gleet, leucorrhœa, and prolapsus of the rectum and womb. The syrup of the blackberry root is also a valuable preparation; so also is blackberry brandy, so called, which is the juice of the fruit mixed with brandy. This is excellent in summer complaints.

FIG. 191.

BLACK COHOSH.

FIG. 192.

BLOODROOT.

Black Cohosh (*Cimicifuga Racemosa*). — This grows in rich soils throughout the United States. The root is the part used. It is slightly narcotic, sedative, antispasmodic, antiperiodic, and exerts a marked influence over the nervous system; being useful in St. Vitus's

dance, epilepsy, nervous excitability, asthma, delirium tremens, and many spasmodic affections. It has an especial affinity for the uterus.

It reduces the arterial action very materially, and hence is useful in palpitation of the heart. It has been used successfully in acute rheumatism, but more particularly in chronic rheumatism.

Preparations. — Fluid extract, dose, half a dram to two drams; solid extract, dose, four to eight grains; tincture, four ounces to the pint of alcohol; dose, one to three drams; cimicifugin, the active principle, dose, one to six grains.

Black Willow (*Salix Nigra*). — This tree is found in the Northern States, along the banks of rivers, especially in New York and Pennsylvania, and is known by the common name of pussy willow. It is a bitter tonic, and is sometimes used in fever and ague. A decoction made from the buds, is said to be a powerful antaphrodisiac, and is accordingly useful in the treatment spermatorrhea.

Bloodroot (*Sanguinaria Canadensis*). — A perennial plant, growing in light, rich soils, in most parts of the United States. The root is the part used. It is emetic, narcotic, expectorant, alterative, escharotic, and errhine. It is used in typhoid pneumonia, bronchitis, rheumatism, dyspepsia, etc. Three to five grains stimulates the digestive organs, and accelerates the pulse.

Preparations. — Fluid extract, dose, five to fifteen drops; solid extract, half a grain to a grain and a half; tincture, twenty drops to a dram; sanguinaria, the alkaloid principle, from one twentieth to one tenth of a grain; sanguinarin, the resinous principle, one quarter to one grain.

Four-grain pills, made of sanguinarin, twelve grains, caulophyllin, twelve grains, solid extract of cimicifuga, twelve grains, are said to be efficacious in amenorrhœa, dysmenorrhœa, and other female disorders.

FIG. 193.

BLUE COHOSH.

FIG. 194.

BLUE FLAG.

Blue Cohosh (*Caulophyllum Thalictroides*). — A perennial plant, growing in low, moist grounds in most parts of the United States.

The root is the part used. It is antispasmodic, diuretic, diaphoretic, alterative, emmenagogue, anthelmintic, parturient, and tonic. It is used in rheumatism, dropsy, epilepsy, hysterics, cramps, amenorrhœa, dysmenorrhœa, chorea, leucorrhœa, hiccough, to hasten delivery, and to relieve after-pains.

Preparations. — Fluid extract, dose, fifteen to forty drops; solid extract, dose, one to five grains; tincture, dose, half a dram to a dram; infusion, dose, two to four ounces; caulophyllin, the active principle of the root, dose, one quarter of a grain to two grains.

In cases of protracted labor, occasioned by fatigue or debility, the infusion is said to be fully equal to ergot in hastening delivery. A wash made by combining one ounce of fluid extract with one ounce of the fluid extract of golden seal, and eight ounces of water, is very excellent for apthous sore mouth.

Blue Flag (*Iris Versicolor*). — A perennial plant, growing in damp places, in most parts of the United States. The root is the part used for medicinal purposes. It is cathartic, alterative, sialagogue, and diuretic. It acts particularly on the glandular system; in large doses, it evacuates and exhausts the system, acting on the liver, and fulfilling the purposes of mercury.

Preparations. — Fluid extract, dose, twenty to sixty drops; solid extract, one to four grains; tincture, one to two drams. Iridin, the active and resinous principle, dose, half a grain to four grains. Equal parts of blue flag, mandrake, and prickly-ash bark, mixed, and given in five to ten-grain doses, every two or three hours, will act as a powerful alterative, and cause free salivation, without making the breath offensive or injuring the gums. Three grains of iridin, five grains of leptandrin, and twenty grains of bitartrate of potassa, form an excellent cathartic in dropsy, producing free watery stools.

Blue Pill (*Hydrargyri Pilulæ*). — This mercurial preparation, generally known by the common name of *blue mass*, or *blue pill*, is made by rubbing mercury, confection of roses, and pulverized liquorice-root together until all the mercurial globules disappear. The mass is divided into pills when wanted. It is the mildest of all the mercurial preparations, and the least liable to produce salivation or irritation of the system. But even this should be used sparingly, and with caution.

The blue mass is alterative and cathartic, and is considerably given to stimulate the action of the liver, and to produce an alterative effect upon the digestive organs. The leptandra and the podophyllum have become its rivals, and will, I sincerely hope, finally take its place.

Boneset (*Eupatorium Perfoliatum*). — An indigenous plant growing in most parts of the United States. The tops and leaves are medicinal. It is tonic, diaphoretic, expectorant, and, in large doses, or when taken as a warm infusion, emetic, and aperient.

Preparations. — Fluid extract, dose, one to two drams; solid extract, dose, five to twenty grains; tincture, dose, one to two ounces; infusion, dose, one to three ounces. Eupatorin, dose, one to three grains.

Two scruples of eupatorin, one scruple of xanthoxylin, and one grain of strychnia, mixed, and made into twenty powders, is excellent for torpor of the liver, or kidneys, and for rheumatism; one powder being taken three or four times a day.

FIG. 195.

BONESET.

FIG. 196.

BUCHU.

Buchu (*Barosma Crenata*). — It grows at the Cape of Good Hope. The leaves are the medicinal portion; they are stimulant, diuretic, antispasmodic, and tonic. Buchu is chiefly given in complaints of the urinary organs, attended with increased uric-acid gravel, chronic inflammation or morbid irritation of the bladder, urethra, and prostate, and retention, or incontinence of urine.

Preparations. — Fluid extract, dose, half a dram to two drams; tincture, dose, two to six drams; infusion, one to six ounces. A combination of fluid extract of buchu, half an ounce; acetate of potash, two drams; and water, eight ounces, taken in doses of four ounces, three or four times a day, is a valuable diuretic.

This combination, however, may be improved by the addition of a little sweet spirits of nitre.

Buckhorn Brake (*Osmunda Regalis*). — This is a fern growing in moist grounds in most parts of the United States. The root, which is the medicinal part, should be gathered in the latter part of May, and in August, and very carefully dried, to prevent moulding. It is mucilaginous and tonic, and is used in coughs, diarrhœa, and dysentery, and as a tonic while getting up from exhausting disease. One root infused in a pint of hot water for half an hour will convert it into a thick jelly. This mucilage may be sweetened with sugar, and freely taken.

Buckthorn (*Rhamnus Catharticus*). — This plant grows in Europe, where it is much esteemed by practitioners. The berries and juice are actively medicinal. It is a powerful cathartic, producing large watery discharges. It is seldom used alone on account of the severity of its action.

Preparations. — Fluid extract, dose, one dram; syrup of buckthorn, made by uniting four ounces of fluid extract with twelve ounces of simple syrup, dose, two drams.

Bugleweed (*Lycopus Virginicus*). — This grows in shady and wet places throughout a greater part of the United States. The whole herb is used. It is a mild narcotic, sedative, sub-astringent, and styptic. It is a valuable remedy in bleeding from the lungs, incipient consumption, and pneumonia. It quiets irritation, and allays cough, and nervous excitement.

Preparations. — Fluid extract, dose, one to two drams; infusion, lose, two to four ounces.

Burdock (*Lappa Minor*). — A native of Europe, and growing in the United States. The root is used, which is useful in scurvy, syphilis, scrofula, gout, leprosy, and disease of the kidneys. It needs to be used for a long time. It is said to be useful for persons afflicted with boils, stye, etc. An ointment prepared from it is serviceable in some diseases of the skin, and obstinate ulcers.

Preparations. — Fluid extract, dose, one dram; solid extract, dose, five to twenty grains; tincture, dose, half an ounce to an ounce.

Burgundy Pitch. — This is the concrete juice of the Norway pine, *abies excelsa*, growing in Europe and Northern Asia, and of the silver fir tree of Europe, *abies picea*. It gently excites the skin, and is used chiefly in the form of plasters, either alone or mixed with other gums and resins.

Butternut (*Juglans Cinerea*). — This is a forest tree, growing in various parts of the continent, known also by the names of oilnut, and white walnut. The inner bark of the root is used, and is a mild cathartic, — being useful in cases of constipation. It is much employed by families, as a domestic remedy, in intermittent and remittent fevers. It evacuates the bowels without debilitating them.

Preparations. — Fluid extract, dose, one to two drams; solid extract, dose, five to twenty grains; juglandin, the active principle, dose, one to five grains. A very good pill is made by mixing one and a quarter drams of the solid extract of butternut, three quarters of a dram of the solid extract of jalap, and ten grains of soap, and dividing the whole into sixteen pills. From two to five may be taken for a dose.

Calcined Deer's Horn (*Cornu Cervinæ Ustum*). — The horns of the deer are said to be in velvet between August and December, and during this period, those which fall are collected, coarsely rasped, and placed in an iron vessel, which is tightly covered, and placed in an oven, or elsewhere, and subjected to a heat of 200° F., which is continued until the rasped horn becomes of the color of roasted coffee. When cooled, it is reduced to powder by trituration, and preserved in closely stopped vials. It is a powerful styptic, taken in teaspoonful doses, every half hour; or, a teaspoonful added to a gill of hot water, and a tablespoonful of this taken every five or ten minutes. It has much efficacy in floodings from the womb, and in excessive menstruation.

Calomel (*Hydrargyri Chloridum Mite*). — This is prepared from mercury, sulphuric acid, and common salt. It is alterative, antisyphi-

litic, and anthelmintic, and, in large doses, purgative. It is much used in venereal diseases, and chronic affections of the liver, combined with opium; in dropsies, combined with squill, foxglove, and elaterium; and in rheumatism and leprosy, combined with antimonials, guaiacum, and other sudorifics. In the beginning of fevers and other complaints, it is often combined with purgatives, as gamboge, scammony, jalap, and rhubarb. Given in small doses, not large enough to purge, it gradually excites salivation. Dose, from one to ten grains.

The tendency of this article to produce salivation, to injure the gums, loosen the teeth, etc., has given rise to much prejudice against it in the public mind; and, indeed, it must be confessed that it has been used by many, from time immemorial, with great indiscretion. In the hands of sensible and prudent men, it is very serviceable in some cases; but the podophyllum and leptandra have so fine an action upon the liver, that they are fast taking the place of calomel and other mercurials, and possibly may in time wholly supersede them. I have prescribed calomel but two or three times in this book, and am willing to see it banished from the materia medica, as soon as the careful investigations of science shall find cause to decree its expulsion.

FIG. 197.

CAMPHOR TREE.

Camphor. — This is obtained from an evergreen tree, growing in the East Indies, — the *laurus camphora*. It is a white, shiny, crystalline substance, extracted from the wood and roots of the above named tree, by boiling them, and is subsequently purified by sublimation. It has a penetrating, peculiar diffusible odor, and a pungent, cooling taste. It is moderately stimulant, diaphoretic, and antaphrodisiac. Dose, from one to ten grains.

Canada Balsam. — This is the fluid obtained from the fir balsam, *abies balsamea*, of Canada, Maine, etc. It is a stimulating diuretic, and, in large doses, cathartic. A dose is from ten to twenty drops, two or three times a day, in pills, or in emulsion. It forms a part of several ointments and plasters. It is used to mount objects in microscopic investigations.

Canada Fleabane (*Erigeron Canadense*). — An annual plant, growing in the Northern and Middle States. It is diuretic, tonic, and astringent, and has been found useful in dropsical complaints, and diarrhœa. The dose of the powder is from thirty grains to a dram; of the infusion, from two to four fluid ounces; of the solid extract, from five to ten grains; to be repeated, in each case, every two or three hours.

Canella (*Canella Alba*). — This is the bark of a South American tree, and is an aromatic stimulant, and a gentle tonic, and useful in debility of the stomach.

Caraway (*Carum Carui*). — This biennial plant grows in Europe. The seeds are the part used, and are aromatic and carminative; they

are used in wind colic, and to improve the flavor of other medicine. The dose is from ten to sixty grains. The dose of the oil of caraway, extracted from the seeds, is from one to ten drops.

Cardamom (*Alpinia Cardamomum*). — This plant grows on the mountains of Malabar. The seeds, which are the medicinal parts, are aromatic, and carminative, and are used to expel wind, and to flavor medicines. Dose, from ten grains to two drams. The volatile oil obtained from them has similar properties.

Cascarilla. — This medicine is the bark of the West India shrub, *croton eleuteria.* It has an aromatic odor, and a warm, spicy taste. It is a pleasant aromatic and tonic, and is used in dyspepsia, chronic diarrhœa and dysentery, wind colic, and other debilities of the stomach and bowels. It counteracts the tendency of cinchona to produce nausea.

Preparations. — Fluid extract, dose, twenty to thirty drops; tincture, dose, one dram; infusion, dose, one to three drams. An alkaline infusion, composed of fluid extract, three ounces; carbonate of potassa, two drams; and water, ten ounces, is excellent in weak stomach, with acidity. Dose, one dram.

Castor (*Castoreum*). — A peculiar substance obtained from the beaver. It is antispasmodic and emmenagogue. It is used in typhus, hysterics, epilepsy, retention of the menses, and in many other nervous diseases. Dose, from ten to twenty grains. A medicine of no great value.

Castor Oil (*Oleum Ricini*). — This is obtained by expression from the seeds of the castor oil bush, *ricinus communis.* When exposed to the air, it turns rancid, and spoils.

As a mild cathartic, this oil is extensively used, particularly among children. It is an exceedingly nauseous medicine, but may be rendered less offensive by being mixed with a few drops of oil of wintergreen, peppermint, or cinnamon; and its bad taste may be nearly destroyed by rubbing it up to a thick batter with carbonate of magnesia. Or, if boiled a few minutes with a little sweet milk, sweetened with loaf sugar, and flavored with essence of cinnamon or peppermint, it may be easily taken. Dose, for an adult, one to three tablespoonfuls; for a child, one, two, or three teaspoonfuls, according to its age.

Catechu. — This is a solid extract, made from the wood of the *acacia catechu*, a tree growing in Asia. It is in dark, brown, and brittle pieces, and is soluble in alcohol. It is a powerful astringent, and is used in chronic diarrhœa, and chronic dysentery. It makes a useful gargle in some forms of sore mouth, in elongated uvula, spongy gums, and sore nipples. The dose of the powder is from ten to thirty grains, and of the tincture, from one to two teaspoonfuls.

Catnip (*Nepeta Cataria*). — A native of Europe, and widely naturalized in this country. The tops and leaves are the medicinal part, and are carminative and diaphoretic when drank as a warm infusion. It

is useful in fevers, in wind colic, nervous headache, hysterics, and nervous irritability.

Preparations. — Fluid extract, dose, two to four drams; infusion, dose, two to four ounces. Fluid extract of catnip, two ounces; and the fluid extract of saffron, one ounce and a half, united, make a popular remedy for colds, and the rashes of children. In nervous complaints, a combination of fluid extract of catnip, six drams; fluid extract of valerian, four drams; and fluid extract of scullcap, four drams, is a valuable remedy. Dose, one to three drams.

Cayenne Pepper (*Capsicum Annuum*). — This plant grows in hot climates, and is known by the common name of *red pepper*. The berry, which is the part used, has an intensely hot and pungent taste. It is a powerful, diffusible stimulant, and is about the only stimulus which the stomach will bear in certain forms of dyspepsia. It is useful in all cases of diminished vital action, and is frequently united with other medicines, either to promote their action, or to lessen the severity of their operation. It is much used in colds, hoarseness, etc., as it promotes a free discharge of mucus and phlegm. Taken in small doses, it has a fine effect upon the mucous membrane of the stomach and bowels, lessening very much the severity of piles, and sometimes curing them. It may be sprinkled daily upon the food, or taken in the form of cayenne lozenges; it is frequently useful as a gargle in sore throats, scarlet fever, etc. Dose of the powder from one to ten grains.

Preparations. — Fluid extract, dose, five to fifteen drops; tincture, dose, half a dram to a dram, used in low forms of fever, and gastric insensibility; infusion, dose, one to three drams. A valuable gargle in scarlet fever may be made by combining fluid extract of cayenne, one ounce; common salt, one dram; boiling vinegar, one pint; boiling water, one pint.

Celandine (*Chelidonium Majus*). — This plant is indigenous to Europe, and is extensively naturalized in the United States. It is a drastic purge, producing watery stools, and is equal to gamboge; it is useful in affections of the liver, and particularly in those of the spleen. In the form of a poultice it is effective in scrofula, indolent ulcers, skin diseases, and piles.

Preparations. — Fluid extract, dose, ten to twenty drops; solid extract, dose, five to ten grains; tincture, dose, half a dram to a dram; infusion, dose, two and a half to five drams. A very good hydragogue cathartic is made by compounding two and a half drams of fluid extract of celandine, with half a dram of fluid extract of henbane, one ounce of sulphate of potassa, one grain of tartar emetic, six ounces of elder water, and ounce of syrup of squill.

Chalk. — On account of its gritty particles, it is unfit for medicinal use until it has been levigated, after which it is called *prepared chalk*. This is the only form in which it is used in medicine. It is an excellent antacid, and is admirably adapted to diarrhœa, accompanied with acidity. The most convenient form of administering chalk is that of

the chalk mixture, which consists of prepared chalk, half an ounce; sugar and powdered gum arabic, two drams each; cinnamon-water and water, four fluid ounces each, and rubbed together in a mortar till they are thoroughly mixed. Dose, a tablespoonful frequently repeated.

FIG. 198.

CAYENNE PEPPER.

FIG. 199.

CHAMOMILE.

Chamomile (*Anthemis Nobilis*). — This perennial plant grows in Europe, and its flowers are considerably used in medicine, the whitest of which are best. They are gently tonic, and are generally used in cold infusion, in cases of weak stomach, dyspepsia, etc. In large doses, the warm infusion will act as an emetic.

Preparations. — Fluid extract, dose, half a dram to a dram; solid extract, dose, four to twenty grains; infusion, dose, half an ounce to an ounce. For dyspepsia, wind in the stomach, etc., thirty pills may be made, by combining one dram of solid extract of chamomile with five grains of the solid extract of rhubarb, and ten grains of assa-fœtida, and taken, one pill at a time, two or three times a day, with advantage.

Charcoal (*Carbo Ligni*). — Prepared charcoal is antiseptic and absorbent, and is employed with great advantage, in certain forms of dyspepsia, attended with bad breath, and putrid eructations; it has a good effect in correcting the fetor of the stools in dysentery: it is considerably used, and with much advantage as an ingredient in poultices. Dose, when taken internally, from one to four teaspoonfuls.

Chloroform (*Chloroformum*). — This is an anæsthetic, used to produce insensibility during surgical operations. A teaspoonful or more is poured upon a handkerchief, which is held to the patient's nose, but not so closely as to prevent the admission of air. The numerous sudden deaths which have occurred from its use, prove it to be an unsafe agent, and it is now seldom employed by careful surgeons. Taken internally it is sedative and narcotic; applied externally, combined with other articles, it is useful in painful affections, as nervous

headache, rheumatism, neuralgia, etc. The dose when taken internally, is from ten to sixty drops, in flax-seed tea.

Cinnamon. — This is the bark of trees growing in Ceylon, Malabar, and Sumatra. It is a very grateful aromatic, being warm and cordial to the stomach; it is also carminative and astringent.

It is not often prescribed alone, but is chiefly used as an aid to less pleasant medicines, and enters into a great number of preparations. It is peculiarly adapted to diarrhœa; and in treating this complaint it is often joined with chalk and stringents. Dose of the bark, from ten to twenty grains. The oil has properties similar to those of the bark.

Cassia Buds. — This spice is a product of China. It consists of the calyx surrounding the young germ of one or more species of cinnamon. Cassia buds have some resemblance to cloves, and are compared to small nails with round heads. They may be used for the same purposes as the cinnamon bark.

Cleavers (*Galium Aparine*). — An annual plant, common to this country and Europe, having an acid, astringent taste. The whole herb is used in infusion, as a cooling diuretic, in scalding of the urine, inflammation of the kidneys and bladder, in gravel, suppression of the urine, etc.

It is also used in fevers, and all acute diseases. The infusion is made by adding two ounces of the herb to a pint and a half of warm water. It should stand three or four hours, and be drank freely when cold. Equal parts of elder-blows, cleavers, and maiden-hair, infused in warm water, make a refreshing drink in scarlet fever, and other eruptive diseases.

Cloves (*Caryophyllus Aromaticus*). — The flowers of this tree, a native of tropical climates, collected before they are fully developed, form cloves. They are highly stimulant and aromatic, and are used to give tone to the digestive organs, particularly when flatulency exists, and to relieve nausea and vomiting. They are more generally employed to improve the taste and modify the action of other medicines. The dose in powder is from five to ten grains. The oil of cloves has similar properties; dose, two to five drops. A little cotton moistened with the oil, and pressed into a decayed tooth, will frequently relieve the toothache.

Cochineal (*Coccus Cacti*). — An insect found in Mexico, inhabiting different species of cactus. They are gathered for use by detaching them from the plant with a blunt knife, and dipping them, enclosed in a bag, into boiling water. Cochineal is anodyne, and has been used with advantage in hooping-cough and neuralgia. It is much used for coloring tinctures, and ointments, and the color called carmine is prepared from it. A tincture is prepared by macerating two ounces of cochineal, in one pint of alcohol, for seven days, and filtering through paper. Dose, from twenty to thirty drops, twice a day.

Cod Liver Oil (*Oleum Morrhuæ*). — This oil is obtained from the

livers of codfish, and is nutritive and alterative. It is a popular remedy in consumption and scrofula, and in those complaints generally in which there is impaired digestion, assimilation, and nutrition. Dose, a tablespoonful three times a day.

Inability to digest this oil, to eat fat meats, or to take fats in any form, is an unfavorable indication in consumption.

Collodion. — This is gun-cotton dissolved in ether. It is applied with a camel's-hair brush, to cuts, burns, wounds, leech-bites, etc., over which it forms a thin pellicle or skin, protecting the injured part from the atmosphere. It should be kept in well stopped bottles, to prevent its evaporating and becoming unfit for use.

Colocynth (*Cucumis Colocynthis*). — A native of northern Africa. The part used in medicine is the fruit, deprived of its rind. It is a powerful drastic, hydragogue cathartic; causing by its harsh action, griping, vomiting, and sometimes bloody discharges; from the severity of its operations, it is rarely used alone. Useful in dropsy, derangements of the brain, and for overcoming torpid conditions of the digestive and biliary organs.

Preparations. — Solid extract, dose, two to thirty grains; compound extract, dose, two to thirty grains.

Colombo (*Cocculus Palmatus*). — A perennial climbing plant, growing in east Africa, and cultivated in the Isle of France. It is a pure, bitter tonic, and is used in dyspepsia, bilious vomitings which attend pregnancy, and during recovery from exhausting diseases.

Preparations. — Fluid extract, dose, twenty to sixty drops; solid extract, dose, four to ten grains; tincture, dose, one to four drams; infusion, dose, three drams to an ounce. A compound infusion made by uniting one dram of fluid extract, four drams of orange peel, and one ounce of water, is useful in a weakened state of the bowels, showing itself in a diarrhœa. Dose, two drams every hour. Fluid extract of colombo, one ounce; fluid extract of ginger, two drams, and water, one pint, also make a useful compound for the same purpose. Fluid extract of colombo, one dram; fluid extract of rhubarb, one dram; fluid extract of ginger, half a dram; water, one pint, — this is useful for a like purpose. The following is also a very good preparation for a similar use: fluid extract of colombo, half an ounce; fluid extract of cascarilla, two drams; tincture of orange peel, two drams; syrup of cinnamon, one ounce; water, six ounces. Dose, one dram every hour.

Coltsfoot (*Tussilago Farfara*). — A native of Europe, and naturalized in this country, especially in the Northern States. It grows in wet places, and low meadows. The leaves are principally used. They are emollient, demulcent, and slightly tonic; used in coughs, asthma, and hooping-cough; and externally in the form of poultice for scrofulous tumors.

Comfrey (*Symphytum Officinale*). — A perennial European plant, cultivated in this country. The root is the part used. It is demul-

cent, and slightly astringent, and is serviceable in diseases of the mucous tissues, and in scrofulous habits; also in diarrhœa, dysentery, coughs, bleeding from the lungs, whites, etc. It may be taken as an infusion, or as a syrup, one ounce to a pint of water; the dose being one to four fluid ounces, three to four times a day. The fresh root bruised forms a valuable application to ulcers, bruises, fresh wounds, sore breasts, and white swellings.

Common Silk-Weed (*Asclepias Syriaca*). — This is a perennial plant, common throughout the United States. It gives out a milky juice upon being wounded, and hence is often called milk-weed. The root is diuretic, alterative, emmenagogue, and anodyne; and is sometimes used in dropsy, retention of urine, suppressed menstruation, scrofula, and rheumatism. Dose of the powder, from eight to twenty-five grains; of the decoction, from one to three fluid ounces.

Copper (*Cuprum*). — The following are the principal salts of copper used in medicine.

Subacetate of Copper (*Cupri Subacetas*). — This is known by the name of verdigris, and is used as a detergent and escharotic; it is applied to warts and fungous growths, and to foul ulcers and ringworm. When reduced to a fine powder, by trituration in a porcelain mortar, the finer parts of this are separated, and called prepared subacetate of copper; this is the preparation used for the purposes above named.

Sulphate of Copper (*Cupri Sulphas*). — In small doses, the sulphate of copper is astringent and tonic; in large ones, a prompt emetic. It is given in small doses in hysterics, epilepsy, and intermittent fevers; and in large doses, to produce speedy vomiting in croup, and to eject poisons from the stomach. A weak solution is sometimes used for syphilitic ulcers, and as an injection in gleet. Dose, as a tonic, one quarter of a grain to two grains, in pill; as a rapid vomit, from two to ten grains, in two ounces of water. The medicines which are incompatible with copper, are alkalies, earths, and their carbonates, borax, salts of lead, acetate of iron, and astringent vegetable infusions, decoctions, and tinctures.

Corrosive Sublimate. — This, in chemical language, is the bichloride of mercury. It is one of the milder mercurial preparations, although when taken in large doses, it is a violent poison, and operates very quickly. It is less apt to salivate than any other mercurial, except blue pill. It is much used as a remedy in syphilis, particularly in the secondary stage, in which, in many cases, it does much good. It is also popular in many skin diseases, as leprosy. When employed for this purpone, it is generally associated with alterative and diaphoretic medicines, such as the compound decoction or syrup of sarsaparilla, preparations of yellow dock, etc. In order to avoid its irritating effects, it is often united with opium, or extract of conium. Dissolved in water, it is valuable as a wash in some skin diseases. It is an ingredient in many of the quack nostrums which are extensively

advertised, and was the active principle in Swaim's Panacea, which had so vast a sale a few years since, and gave such a princely fortune to its proprietor. One ounce of corrosive sublimate, dissolved in one quart of alcohol, is a complete bed-bug exterminator.

Cotton (*Gossypium Herbaceum*). — Cotton is chiefly employed in cases of recent burns, and scalds, — an application of it, which surgeons have learned from popular use. It diminishes the inflammation, prevents blistering, and hastens the cure. It is applied in thin and successive layers. The inner bark of the root is said to be emmenagogue, parturient, and abortive. A decoction of it, made by boiling four ounces of the inner bark of the root in a quart of water, down to a pint, is said to be given in wineglassful doses by the female slaves of the South, for the purpose of producing abortion. It is excellent in chlorosis.

Preparation. — Fluid extract, dose, four drams.

Cranesbill (*Geranium, Maculatum*). — An indigenous plant, growing in all parts of the United States, in the open woods. The root is the medicinal part. It is a powerful astringent, similar to kino, and catechu, and a valuable substitute for those articles, because less expensive. It forms an excellent gargle in sore throats and ulcerations of the mouth, and is valuable for treating those discharges arising from debility, after the exciting causes are removed. It has no unpleasant taste, and is therefore well adapted to infants, and persons of delicate stomachs. As an injection, it is used in gleet, and whites.

FIG. 200.

CRANESBILL.

Preparations. — Fluid extract, dose, half a dram to a dram; solid extract, dose, three to fifteen grains; geraniin, the active principle, dose, one to five grains; tincture, dose, two and a half to four drams; infusion, dose, one to two ounces. A valuable astringent wash for sore mouth, etc., and as an injection in leucorrhœa, etc., is made by uniting fluid extract of cranesbill, half an ounce; fluid extract of black cohosh, half an ounce; fluid extract of golden seal, half an ounce; fluid extract of witch-hazel, half an ounce; and water, one quart. Geraniin, dioscorein, and caulophyllin, united in equal parts, and given to an adult in six-grain doses, every fifteen or twenty minutes, have an excellent effect in diarrhœa and cholera-morbus, when there is much pain and rumbling of the bowels.

Crawley (*Corallorhiza Odontorhiza*). — A perennial plant, growing on barren hills and hard clay soils in New York. The root is the part used. It is sedative and diaphoretic, and is used in inflammatory diseases, and in typhoid fever; also in flatulency, cramps, hectic fever, and night sweats. When the liver requires to be acted upon, it should be combined with mandrake or Culver's root. The powdered

root should be kept in well-stopped vials; its dose is from twenty to thirty grains, in warm water, every hour or two.

Creosote (*Creosotum*). — This is obtained by the distillation of tar. It is irritant, narcotic, styptic, antiseptic, and moderately escharotic. It has been given in diabetes, epilepsy, hysterics, neuralgia, bleeding from the lungs, and chronic bronchitis. It is an excellent remedy for arresting nausea and vomiting, when not dependent on inflammation. The dose, when given internally, is one or two drops. It is most easily taken in the form of pill. In some forms of bronchitis, the vapor of creosote is inhaled with advantage. It may sometimes be applied with excellent effect, to indolent or ill-conditioned ulcers, in which case, two, four, or six drops may be dissolved in an ounce of distilled water. In some cases the solution is mixed with poultices. One or two drops of pure creosote, introduced into a hollow tooth on a little cotton, is generally a speedy remedy for toothache, but great care must be taken that it does not come in contact with the tongue or cheek.

Croton Oil (*Oleum Tiglii*). — This is obtained from the seeds of the *Croton Tiglium*, a plant growing in the East Indies. It is a powerful cathartic, producing watery stools, and is used in torpidity of the bowels, dropsy, apoplexy, mania, inflammation of the brain, hydrocephalus, coma, and wherever a powerful revulsive action is needed to call the blood away from the brain. A drop placed on the tongue of a person in the comatose state, will generally operate. Two to six drops, rubbed upon the skin, produce an eruption or pimples in twelve hours. In this way, it is used in diseases of the throat and chest, and some other affections. If the skin is very sensitive, let it be combined with an equal quantity of sweet oil.

Cubebs (*Cubebæ*). — A climbing perennial plant, growing in the East Indies. The berries are the medicinal part. They are stimulant, purgative, and diuretic, acting particularly upon the urinary organs, and arresting discharges from the water pipe, and much used in the treatment of gonorrhœa and gleet. It should not be used during active inflammation. Dose of powdered cubebs, from thirty to sixty grains.

Preparations. — Fluid extract, dose, half a dram to a dram and a half; ethereal fluid extract, dose, one to two drams; solid extract, dose, two to twenty grains; tincture, dose, one to two drams. A compound, made of fluid extract of cubebs, five drams; fluid extract of ergot, one and a half drams; cinnamon water, half a dram; and powdered loaf sugar, one dram, may be taken with advantage in gonorrhœa, gleet, and leucorrhœa; dose, one dram.

Culver's Root (*Leptandra Virginica*). — A perennial plant growing throughout the United States in limestone districts, and flowering in July and August. The root is the medicinal part. It is frequently called *black root*. When dried, it is tonic, cholagogue, and laxative, and is a very valuable remedy in affections of the liver, as it acts upon this organ with energy, without purgation. It is also useful in typhoid fevers, and in dyspepsia, diarrhœa, and dysentery. A powder

is made from it, containing its active principle, and called leptandrin, which has a fine effect in diarrhœa, cholera infantum, typhoid fever, some forms of dyspepsia, and in all diseases connected with derangements of the liver.

Preparations. — Fluid extract, dose, one third of a dram to a dram; leptandrin, the active principle, dose, in acute cases, one fourth of a grain to one grain; in chronic cases, one to two grains; tincture, two ounces to a pint of alcohol, dose, one dram to one ounce.

Dandelion (*Taraxacum, Dens-Leonis*). — This perennial herb is diuretic, aperient, and tonic. It is generally thought to act especially upon the liver. Used in dyspepsia, diseases of the liver and spleen, and in debilitated and irritable conditions of the stomach and bowels.

Preparations. — Fluid extract, dose, one to two drams; compound fluid extract, dose, one to two drams; fluid extract of dandelion and senna, dose, one to two drams; solid extract, dose, ten to twenty grains; infusion, two ounces to one pint of water, dose, four to six ounces. In dropsical affections, the following compound infusion will be found useful: fluid extract of dandelion, six drams; fluid extract of rhubarb, one and a half drams; fluid extract of henbane, twenty-four drops; bicarbonate of soda, half a dram; tartrate of potassa, three drams; water, three and a half ounces; take one third, three times a day. For jaundice, and diseases of the liver and kidneys, the following pills have much efficacy. Solid extract of dandelion, one dram; solid extract of bloodroot, one dram; leptandrin, one scruple; podophyllin, five grains; oil of peppermint, five minims; to be divided into fifty pills, and one or two taken three times a day.

FIG. 201.

DEADLY NIGHTSHADE.

FIG. 202.

DOGWOOD.

Deadly Nightshade (*Atropa Belladonna*). — A perennial plant, growing in Europe and this country, and having a faint odor, and a sweet, nauseous taste. It is narcotic, diaphoretic, and diuretic; is a valuable remedy in convulsions, neuralgia, hooping-cough, rheumatism, gout, paralysis, and many diseases having their seat in the nervous system. It has been much praised as a preventive of scarlet fever, though its powers for this purpose are doubtful.

Preparations. — Fluid extract, dose, five to ten drops; solid extract, dose, one quarter to one grain; tincture, two ounces to a pint of

diluted alcohol, dose, from fifteen to thirty drops. The solid extract is used, mixed with lard or with other substances, as a local application for relieving pain, dilating the pupil of the eye, for removing stricture of the urethra, the anus, rigidity of the mouth of the womb, etc.

Dogwood (*Cornus Florida*). — This is a small tree growing most abundantly in the Middle States. The bark is used as a medicine. It is tonic, astringent, antiperiodic, and stimulant. It increases the frequency of the pulse, and elevates the temperature of the body. It has been substituted for peruvian bark in intermittent fevers. Dose of the powdered bark, from ten to sixty grains.

Preparations. — Fluid extract, dose, half a dram to two drams; solid extract, dose, five to ten grains; tincture, four ounces to a pint of alcohol, dose, one to four drams; infusion, two ounces to a pint of water; dose, half an ounce to two ounces; cornin, the active principle, dose, one to ten grains.

Dwarf Elder (*Aralia Hispida*). — A perennial under-shrub, growing from New England to Virginia. The bark of the root is diuretic and alterative. An infusion made from it is used in gravel, suppression of urine, and dropsy; to be taken in wineglassful doses, three or four times a day.

Elder (*Sambucus Canadensis*). — The flowers, berries, and inner bark of the elder, are used in medicine. A warm infusion of the flowers is diaphoretic, and gently stimulant. A cold infusion is diuretic, alterative, and cooling; used in erysipelas, liver affections of children, rheumatism, scrofula, and some syphilitic diseases. The bark, pounded with lard, forms a useful ointment for burns and scalds, and some diseases of the skin.

Elecampane (*Inula Helenium*). — This perennial plant is a native of Europe and Japan, and is cultivated in this country. The root is stimulant, tonic, diuretic, and expectorant, and is used in chronic affections of the lungs and air passages. It is said a decoction from the root forms a good application for the itch, and other skin diseases. Dose of the powdered root, from a scruple to a dram; of the infusion, one or two fluid ounces.

Electro-Magnetism. — Within a few years, electro-magnetism has been employed extensively as a remedial agent, particularly in the various forms of nervous disorders. That it is a valuable agent in the treatment of disease, few thinking physicians doubt; yet, like most other new things in medicine, it has had its enthusiastic admirers, who have claimed for it remedial powers beyond what it really has, and who have applied it to purposes beyond its sphere of usefulness. Various instruments have been constructed for applying this remedy, but no one has appeared to me so well adapted to its purpose, as that manufactured by Messrs. Hinds & Williams, of this city.

Feverfew (*Pyrethium Parthenium*). — In warm infusion, this herb is valuable in recent colds, flatulency, worms, irregular menstruation,

hysterics, and suppression of the urine. The cold infusion is a tonic. A poultice made of the leaves, soothes and alleviates pain.

Figwort (*Scrophularia Nodosa*). — The leaves and root are diuretic, alterative, and anodyne, and in some places are used in liver complaints, scrofula, dropsy, and diseases of the skin. Applied externally in the form of ointment, or fomentation, it is said to be useful in piles, painful tumors, bruises, ringworm, and inflammation of the breasts. Dose of the infusion, from two to four fluid ounces, three times a day.

Flaxseed (*Linum Usitatissimum*). — This is demulcent and nutritive, and is much used in coughs, bronchial diseases, inflammation of the urinary organs, bowels, and lungs; chiefly taken in the form of flaxseed tea. The infusion is sometimes used as an injection in dysentery and piles. Linseed oil is prepared from flaxseed.

FIG. 203.

FOXGLOVE.

FIG. 204.

GINSENG.

Foxglove (*Digitalis Purpurea*). — A biennial plant, growing in the temperate parts of Europe. The leaves, in proper doses, are sedative and diuretic, reducing the pulse, and increasing the flow of urine. In large doses, they are a narcotic poison. The medicine has been much used in inflammatory diseases, palpitation of the heart, and in dropsy connected with diseased heart or kidneys. When taken for some time, it is liable to accumulate in the system, and suddenly to manifest poisonous and alarming symptoms, as if a large dose had been taken. The American hellebore is fast supplanting it as a remedy. Dose of the powdered leaves of foxglove, from one to three grains; of the tincture, from eight to twelve drops.

Frostweed (*Helianthemum Canadense*). — This herb, also known by the name of rockrose, is tonic, astringent, and alterative, and has been considerably used in scrofula; combined with turkey corn, and queen's root, it is said to have effected cures in secondary syphilis. A decoction forms a useful gargle in ulcerations of the mouth and throat in

scarlet fever, and other diseases, and as a wash in scrofulous inflammation of the eyes. Dose of the fluid extract, one to two drams, three or four times a day.

Galls. — These are the unhealthy excrescences found growing on the young boughs of the dyer's oak, *quercus infectoria*, growing in Asia. They are powerfully astringent. In the form of infusion, or decoction, made in the proportion of half an ounce to a pint of water, they are useful as an astringent gargle, wash, or injection; and finely powdered galls, one part to eight parts of lard, make a valuable ointment for bleeding piles. Dose of powdered galls, from ten to twenty grains.

Gamboge. — The hardened juice of trees growing in Siam and Cochin China. This gum-resin is a hydragogue cathartic, acting severely and harshly upon the bowels, and hence is not often used alone. On account of the severity of its action, it is improper to use it during inflammation of the stomach or bowels, piles, pregnancy, diseased womb, or excessive menstruation. Combined with cream of tartar and jalap, it is a valuable remedy in dropsy. The dose is one or two grains.

Garlic (*Allium Sativum*). — The bulb is the part used. It is stimulant, diuretic, expectorant, and rubefacient; useful in coughs, hoarseness, hooping-cough, and in the nervous spasmodic coughs of children. Dose, from twenty grains to three drams; dose of the juice, mixed with sugar, half a teaspoonful to a teaspoonful.

The bruised bulbs are sometimes usefully applied as a poultice to the chests of young children having inflammation of the lungs, and as drafts to the feet in inflammation of the brain, fevers, etc.

Gentian (*Gentiana Lutea*). — It grows among the Alps, Apennines, and Pyrenees. The root is the part used, and is brought to this country from Germany. This medicine has long maintained its reputation, having, it is said, derived its name from Gentius, king of Illyria. It is a pure and simple bitter, exciting the appetite, and invigorating the digestive powers. It may be used in all cases dependent on pure debility. It is much employed in dyspepsia, and during recovery from exhausting diseases.

Preparations. — Fluid extract, dose, half a dram to a dram; compound fluid extract, dose, half a dram to a dram; solid extract, dose, three to fifteen grains; tincture, four ounces to one pint of diluted alcohol, dose, two to five drams. A valuable preparation is made, by uniting fluid extract of rhubarb, two ounces; fluid extract of gentian, half an ounce; diluted alcohol, two pints; dose, half an ounce to two ounces.

Ginger (*Zingiber Officinale*). — This is a native of Hindostan, and is cultivated in all parts of India. The root is the part used. It is a grateful stimulant and carminative, and is much used for dyspepsia, wind in the stomach, colic, gout, etc. It is an excellent addition to bitter infusions, and is much used to disguise the taste of nauseous medicines. Dose, from ten to thirty grains.

Preparations.— Fluid extract, dose, half a dram to a dram; tincture, four ounces to one pint of diluted alcohol, dose, two to four drams; infusion, dose, one to two ounces; syrup, dose, one to two drams.

Ginseng (*Panax Quinquifolium*).— A perennial plant, growing in the Middle and Southern States. It is a mild tonic and stimulant, and has some reputation for improving impaired appetite, and for nervous debility, weak stomach, etc. Some persons are in the habit of chewing it, and it is considerably used in this way. Dose of the powdered root, from ten to sixty grains; of the infusion, from two to four fluid ounces.

Glycerin. — This is the sweet or sugary portion of oils, and is obtained from them during the manufacture of lead plaster. It is demulcent and antiseptic, and has been recently recommended and used, to some extent, in place of cod liver oil, in consumption. It has been still more used, however, as a soothing and emolient external application in skin diseases, and also in place of lard in the preparation of ointments.

Gold. — The chief sort of gold used in medicine, is the chloride or muriate of gold and soda. It is diuretic and alterative. It is used in scrofula, skin diseases, goitre, scirrhous tumors, opthalmia, dropsy, and syphilis. The dose is from one thirtieth to one twelfth of a grain, and is given dissolved in water, or made into pill with starch or gum arabic.

Golden Seal (*Hydrastis Canadensis*).— A perennial plant, growing throughout the United States, particularly in the West. The root is the medicinal part. It is a tonic, having especial action upon diseased mucous tissues, and is particularly beneficial during recovery from exhausting diseases. It is used in dyspepsia, chronic affections of the nervous coats of the stomach, erysipelas, and remittent, intermittent, and typhoid fevers. United with geranium, it has a fine effect in chronic diarrhœa and dysentery.

FIG. 205.

GOLDEN SEAL.

Preparations.— Fluid extract, dose, half a dram to two drams; solid extract, dose, two to five grains; hydrastin (resinoid), dose, one half to five grains; hydrastin (neutral), dose, two to six grains; hydrastina (alkaloid), dose, one to five grains; tincture, dose, three ounces to one pint of diluted alcohol, dose, half an ounce to an ounce and a half. For various forms of sore mouth and ulcerated sore throat, the following is a useful gargle: fluid extract of golden seal, half an ounce; fluid extract of blue cohosh, half an ounce; fluid extract of witch-hazel, half an ounce; pulverized alum, one dram; honey, three drams; water, one pint. As a stimulant for a sluggish

liver, and as a tonic in enfeebled mucous membrane in epidemic dysentery, and other complaints, the following powders are valuable: hydrastin, twenty grains; leptandrin, twelve grains; podophyllin, two grains; pulverized cayenne, two grains; sugar of milk, or pulverized loaf sugar, one dram; rubbed together thoroughly in a mortar, and divide into twenty powders; give one every two hours.

Ground Ivy (*Nepeta Glechoma*). — A perennial herb, common to the United States and Europe; in some places known as *gill-over-the-ground.* The leaves are the part used, which are stimulant, tonic, and pectoral; considered useful in jaundice, asthma, and diseases of the kidneys and lungs.

Guaiacum. — This medicine is the shavings or chips of the wood of a tree growing in the West Indies, also resin obtained from the same tree. It is stimulant and alterative, and is used in chronic rheumatism, diseases of the skin, scrofula, and venereal complaints. The tincture of the resin is valuable as an emmenagogue. Dose of the tincture, from one-half to two teaspoonfuls, to be taken with milk. The wood is much used as an ingredient in alterative preparations of sarsaparilla, etc.

Gum Arabic. — This is the hardened juice of trees growing in Egypt, Arabia, and other tropical countries, being several varieties of the acacia. It is demulcent, and a combustive nutritive, and is much used in forming mixtures for hoarseness, cough, sore throat, gonorrhœa, inflammation of the bladder, strangury, bronchitis, and irritations of mucous membranes generally. Mucilage of gum arabic is a preparation made by dissolving four ounces of powdered gum in a pint of boiling water.

Gum Hemlock. — This is the hardened juice of the hemlock, *Abies Canadensis*, a tree growing in Canada and Maine. This gum is a mild rubefacient, and like burgundy pitch, chiefly used to make plasters, etc., for which purpose it is very valuable. A tincture of the gum is diuretic and stimulant. The oil of hemlock is valuable, in combination with other oils, in preparing liniments. The bark is astringent, and is much used in tanning leather.

Hæmastasis. — This word is used to imply the retention of the venous blood in the limbs by ligatures. A cord or common handkerchief, is tied round the upper part of the arms, or thighs, and a piece of wood being slipped under the cord, is twisted round until the cord is so tightened as to prevent the return of the venous blood, but not to prevent the outward passage of the arterial blood. In this way, the blood passing out continually in the arteries, and not returning by the veins, the vessels of the limbs become filled to their utmost capacity, and a great quantity, for the time being, is withdrawn from the trunk, — greater than any surgeon would dare to remove with the lancet. This process is useful in bleedings from the lungs, stomach, and womb, and inflammation of the brain, lungs, bowels, etc., and in whatever case it may be thought desirable, for the time being,

to lessen the blood in the head or trunk, without debilitating the patient.

Hair-cap Moss (*Polytrichum Juniperum*). — An evergreen plant growing on poor sandy soils in the Northern States. A strong infusion of it is powerfully diuretic. In dropsical cases, two fluid ounces of the infusion should be taken every half hour. It is useful in fevers, inflammations, gravel, etc.

Hardhack (*Spiræa Tomentosa*). — This is a beautiful shrub, common in the United States. Its leaves are of a dark green color above, and white underneath. It is tonic and astringent, and is much used in chronic diarrhœa, cholera infantum, etc. It agrees well with the stomach, and is deservedly a popular remedy in summer complaints of children.

FIG. 206.

HARDHACK.

A fluid extract of it is prepared by Tilden & Co.; dose, four to twenty drops. It is much used in the form of infusion. The green herb boiled in milk forms a valuable preparation in chronic diarrhœa, when attended with much debility.

Hardleaf Golden-Rod (*Solidago Rigida*). — A perennial plant, growing throughout the United States, especially on the western prairies. It is tonic, astringent, and styptic, and useful to arrest bleeding from the nose, lungs, stomach, and bowels. The powder and infusion are used, both externally and internally.

Helonias (*Helonias Dioica*). — This herb is common in the United States, and is known by the name of *False Unicorn* plant. The root, which is the part used, is tonic, diuretic, and vermifuge. In large doses, it is emetic, and when used fresh, sialagogue. In five or ten grain doses, three times a day, it relieves dyspepsia, restores the appetite, expels worms, and relieves colic. It is a valuable womb tonic, gradually removing debility of that organ, and curing whites, painful menstruation, and a tendency to habitual abortion. Dose of the decoction, from two to four fluid ounces. The decoction is said to kill insects, bugs, etc.

Preparations. — Fluid extract, dose, one to three drams; helonin, the active principle, dose half a grain to a grain.

Henbane (*Hyoscyamus Niger*). — This plant grows abundantly in Great Britain, and on the continent of Europe, and is rare in this country. All the parts are active. It is narcotic, gently accelerating the circulation, increasing the general warmth, occasioning a sense of heat in the throat, and after a time inducing sleep. It is often used in the place of opium, because it does not bind the bowels. Used in rheumatism, gout, bronchitis, asthma, consumption, hooping-cough, hysterics, and spasmodic affections generally.

Preparations. — Fluid extract, dose, ten to twenty drops; solid extract, dose, half a grain to a grain; tincture, two ounces to one pint of diluted alcohol, dose, half a dram to a dram and a half; hyoscya-

min, the active principle, dose, one eighth to half a grain. In neuralgia, rheumatism, St. Vitus's dance, painful menstruation, etc., the following may be found useful: solid extract of hyoscyamus, two drams; solid extract of valerian, two drams; solid extract of aconite, one dram; sulphate of quinia, one dram. Mix, and divide into two grain pills; one pill every two or three hours.

High Cranberry (*Viburnum Opulus*). — This shrub grows in rich soils in Canada, and in the northern United States. The bark, which is the medicinal part, is antispasmodic, being used in cramps, spasms, asthma, hysterics, and is useful for those who are subject to convulsions during pregnancy, and at the time of childbirth. It is popularly known by the name of *Cramp Bark.* A decoction or infusion of the bark, may be used in tablespoonful doses, two or three times a day. Dose of the extract, from one to five grains; in womb troubles, it may be united with caulophyllin, cimicifugin, aletridin, senecin, and asclepidin; and in flatulent colic, spasmodic pains of the stomach and bowels, it may be combined with dioscorein.

FIG. 207.

HENBANE.

FIG. 208.

HOREHOUND.

Horehound (*Marubium Vulgare*). — This well known perennial herb is a native of Europe, and has become naturalized in this country. It is tonic, aperient, pectoral, and sudorific. It is deservedly popular in domestic practice, for colds, asthma, throat-ails, bronchitis, and other pectoral affections, attended with cough. It is much used in candy.

Preparations. — Fluid extract, dose, half a dram to one dram; solid extract, dose, five to ten grains; tincture, two ounces to one pint of alcohol, dose, half an ounce to an ounce; syrup, three ounces fluid extract to one pint of simple syrup, dose, three to six drams.

Hops (*Humulus Lupulus*). — The cones of this well-known plant are tonic, hypnotic, antilithic, and anthelmintic. They are chiefly used for promoting sleep, and relieving pain and irritability of the nervous system. Hops are valuable in the form of fomentation, either alone, or in combination with boneset, and other bitter herbs. An

ointment of hops and stramonium leaves is sometimes used in salt-rheum, and upon painful tumors and ulcers. A pillow stuffed with hops, dipped in hot water, and placed under the head of the patient, relieves pain and procures sleep.

Lupulin is the yellow powder obtained by threshing the hops, and is preferable to the hop itself. It is a powerful antaphrodisiac, composing the genital organs, and quieting painful erections, in gonorrhœa, etc.

Preparations. — Fluid extract, dose, half a dram to a dram; solid extract, dose, five to twenty grains; tincture, two and half ounces to one pint of alcohol, dose, three to six drams; infusion, four drams to one pint of water, dose, two to four ounces; lupulin, dose, six to ten grains; tincture of lupulin, two ounces to one pint of alcohol, dose, one to two drams, in sweetened water; fifteen to twenty grains of lupulin, well rubbed up with white sugar in a mortar, is very efficacious in priapism, chordee, and spermatorrhœa.

Horsemint (*Monarda Punctata*). — This well-known plant, which is common to the United States, is stimulant, carminative, and diuretic. A warm infusion may be used in flatulence, nausea, and vomiting. If the body be kept cool while taking it, it will act as a diuretic. The oil of horsemint, is used for similar purposes with the plant. Dose, from two to six drops on sugar. Dose of the essence, from ten to forty drops in sweetened water. The oil is frequently used as an ingredient in liniments.

Horseradish (*Cochlearia Armoracia*). — The fresh root of this well known perennial is stimulant, diuretic, antiscorbutic, and rubefacient. It is useful in rheumatic, paralytic, scorbutic, dropsical, and dyspeptic affections. It is said that a warm infusion of the fresh root in cider, drank freely every night, will cause perspiration, and a free flow of urine, and will consequently cure dropsy. The fresh root grated in vinegar, and eaten with meat at dinner, strengthens the stomach, and promotes digestion.

Houseleek (*Sempervivum, Tectorum*). — The bruised leaves of this perennial, form a cooling application to burns, stings of insects, erysipelas, and other inflammations; valuable also for ringworm, shingles, and other skin diseases.

Hydrangea (*Hydrangea Arborescens*). — This grows abundantly in the Southern, Middle, and Western States. Its root is medicinal. It is diuretic, and has been much praised for its power of relieving the excruciating pain, caused by the passage of stone through the urethra, as well as for infallibly removing such stones from the bladder, provided they are not already too large for passage through the water pipe. As many as one hundred and twenty calculi have been known to pass off from one person, under the use of this remedy. A concentrated decoction, or the fluid extract prepared by Tilden & Co., may be taken in teaspoonful doses several times a day, — care being taken not to push the medicine to the extent of dizziness, or oppression of the chest.

Hyssop (*Hyssopus Officinalis*). — This is a native of the continent of Europe, and is cultivated in this country. The tops and leaves are the parts used. They are stimulant, aromatic, carminative, and tonic. The infusion has been much employed in chronic bronchitis of old people, and those of debilitated habits. It makes the raising of mucus more easy. The infusion may be combined with sage and alum, and sweetened with honey. The fresh leaves bruised, and applied externally, relieve the pain, and disperse the spots and marks caused by contusions.

Iceland Moss (*Cetraria Islandica*). — This plant is found in the northern latitudes, both of the old and new world, and is abundant on the mountains, and in the sandy plains of New England. It received its name from its prevalence in Iceland, in which country, as well as in Lapland, it serves, in consequence of the gum and starch it contains, as food for the inhabitants. It is demulcent, tonic, and nutritious, and is well fitted to relieve affections of the mucous membrane of the lungs and bowels, connected with debility of the digestive organs; it is given therefore in chronic bronchitis, and other affections of the chest, attended with copious expectoration, especially when the matter discharged is purulent; also in dyspepsia, chronic dysentery, and diarrhœa. It is usually employed in the form of decoction; and is much used in the common article of diet, called blanc mange.

Ice Plant (*Monotropa Uniflora*). — This perennial plant, found in various parts of the country, is snow white, resembling frozen jelly, and is juicy and tender, dissolving in the hands like ice. The flowers are in shape like a pipe; it is hence called the pipe plant. The root is the medicinal part, and is tonic, nervine, and antispasmodic. It has also been considered sedative and diaphoretic; and the powder has been sometimes used in the place of opium. It is said to be valuable in epilepsy, chorea, and other spasmodic affections. Dose of the powdered root, from thirty to sixty grains, two to three times a day.

Indian Hemp (*Apocynum Cannabinum*). — This perennial plant resembles bitter-root, and grows in similar situations. The root is powerfully emetic, and in decoction, diuretic, and diaphoretic. It diminishes the frequency of the pulse, and produces drowsiness. It has great efficacy in dropsy.

Preparations. — Fluid extract, dose, as a tonic, five to fifteen drops, as an emetic, twenty to sixty drops; solid extract, dose, one to five grains; tincture, dose, one to two drams, as a tonic, half an ounce to an ounce, as an emetic; infusion, half an ounce to a pint of water, dose, half an ounce to two ounces.

Indian Turnip (*Arum Triphyllum*). — This is a perennial plant, growing in damp places in North and South America, and known by the name of dragon root. The root when chewed, is excessively acrid, producing a biting sensation which may be somewhat relieved by

milk. The fresh root is acrid, expectorant, and diaphoretic, and has been used in asthma, hooping-cough, chronic bronchitis, chronic rheumatism, and colic, and externally, in scrofulous tumors, scald head, and other skin disorders. Dose of the grated root, in syrup or mucilage, ten grains, three or four times a day.

Iodine (*Iodinum*). — This is prepared from the ashes of kelp, or seaweed, and is in small bluish-black, shining scales. It is alterative, tonic, and somewhat diuretic. It has been chiefly employed in diseases of the absorbent and glandular system, particularly scrofula, goitre, and glandular tumors generally. Dose, in substance, half a grain, two or three times a day, in form of pill; in form of tincture, five to ten drops.

Iodide of Potassium (*Potassii Iodidum*). — This is one of the preparations of iodine, and is sometimes improperly called *hydriodate of potassa*. It is formed by decomposing the iodide of iron, by carbonate of potassa. It is used for the same purposes as iodine, but chiefly as an alterative in tertiary syphilis, for which it is a specific; also in some forms of chronic rheumatism, and in leprosy. Dose of the salt, from two to twenty grains. It is much combined with bitter tinctures, and particularly with the compound preparations of sarsaparilla, yellow dock, and queen's root. The acids and metallic salts are incompatible with it.

Ipecacuanha. — This is a small perennial plant, growing in moist woods, in several countries of South America. The root is the part used. It is a very valuable emetic, in large doses; in smaller doses, it is sudorific and expectorant. Used to produce vomiting in the commencement of fevers, inflammatory diseases, swelled testicles, and before the paroxysms of ague; and to excite nausea in dysentery, asthma, hooping-cough, various hemorrhages, and inflammation of the lungs; and, combined with opium, to produce diaphoresis in rheumatism, gout, and febrile complaints. Dose, as an emetic, from fifteen to thirty grains; to excite nausea, from one to three grains; and to produce diaphoresis, two to six grains, with one grain of opium.

Preparations. — Fluid extract, dose, as an expectorant, five to ten drops; as an emetic, half a dram to a dram; tincture, half an ounce to an ounce and a half; wine of ipecac, three ounces to one pint of sherry wine, dose, a quarter to half a dram, as an expectorant; two and a half to five drams as an emetic. The following is a useful expectorant for young children: fluid extract of ipecac, two drams; syrup of tolu, five drams; mucilage of gum arabic, one ounce; sherry wine, three drams, — mix. Dose, one dram.

Iron (*Ferrum*). — As this is the most abundant, so it is the most useful of all the metals. It is widely diffused through the mineral, the vegetable, and the animal kingdoms. It is an essential constituent in the blood of man, and as a medicine it has great value, being a powerful tonic. In most cases where the blood is thin and reduced, iron is our best remedy; it raises the pulse, promotes the secretions, and gives color, body, and nutritive qualities to the blood. It is much

used, in some one of its prepared forms, in chronic anæmia, chlorosis, hysterics, whites, rickets, chorea, dyspepsia, neuralgia, and particularly consumption. The following are most of the chemical preparations of iron used in medicine.

Ammonio-Citrate of Iron (*Ferri Ammonio-Citras*). — This is in the form of thin scales, of a beautiful, garnet-red color, and has a slightly acid taste. It is very soluble in water. Its great solubility gives it some advantages over the citrate. The dose is five grains, three times a day, in solution.

Black Oxide of Iron (*Ferri Oxidum Nigrum*). — This is a dark, grayish-black powder, unchangeable in the air, and having magnetic properties. It is a valuable chalybeate, and may be given in five to fifteen-grain doses.

Citrate of Iron (*Ferri Citras*). — This is a valuable preparation of iron. It is soluble in water. Usually given in the form of pill, in two to five grain doses, three times a day.

Citrate of Iron and Quinia (*Ferri et Quinæ Citras*). — In the form of shining scales, garnet-colored, and soluble in water. An excellent antiperiodic and tonic. Given in intermittents, when the blood is low, etc. Dose, five to ten grains, two or three times a day.

Citrate of Iron and Strychnia. — Dr. James R. Nichols & Co., of this city, were the first to introduce this combination of strychnia with iron, to American physicians. It is a valuable preparation, and is constantly winning the favor of the profession. It combines the properties of iron and strychnia, and has proved an efficacious remedy in atonic dyspepsia, absence of the menses, St. Vitus's dance, green-sickness, hysterics, etc. It is a beautiful salt, looking like citrate of iron, except that it is a little darker. Three grains of the iron are combined with one sixteenth of a grain of strychnia.

Hydrated Oxide of Iron (*Ferri Oxidum Hydratum*). — This is in a reddish-brown, moist mass, not much used in medicine, except as an antidote to the poison of arsenic, for which it is very valuable. It should be given in tablespoonful doses, often repeated.

Iodide of Iron (*Ferri Iodidum*). — The iodide of iron is a crystalline substance, of a greenish-black color, and styptic taste. It has tonic, alterative, diuretic, and emmenagogue properties. It is employed chiefly in scrofulous complaints, swelling of the glands of the neck, chlorosis, absence of the menses, and leucorrhœa. In obstinate syphilitic ulcers, and in secondary syphilis, occurring in scrofulous and debilitated subjects, it has been used with success. Dose, three grains, gradually increased to eight. It should never be given in the form of pill.

Lactate of Iron (*Ferri Lactas*). — This has the general medicinal properties of the ferruginous preparations. It increases the appetite in a marked degree, and has been used with decided benefit in chlorosis. Dose, one to three grains, three times a day. The dose may be gradually increased. Given in the form of solution, pill, or lozenge.

Phosphate of Iron (*Ferri Phosphas*). — This is a slate-colored powder, insoluble in water. It is a valuable remedy in consumption, cancer, and nervous diseases, accompanied by a low state of the blood. Dose, one or two grains, three times a day.

Per Salt of Iron (*Monsel's Styptic*). — This is a most valuable styptic, and is used with success in restraining violent bleedings. It produces no irritant effects upon the tissues, and may be used with safety both in slight and extensive surgical operations. Physicians should have it by them, and will find it very serviceable in sudden emergencies of bleeding. It is prepared in solution and in the form of dry salt, by Dr. James R. Nichols & Co., of this city. The solution is the most convenient and eligible form, and may be applied as prepared.

Powder of Iron (*Ferri Pulvis*). — This is what is often called iron by hydrogen, or Quévenne's iron. It is an impalpaple powder, and of an iron-gray color. If black, it is worthless. It is used in anæmia, and in all those conditions characterized by deficiency of coloring matter in the blood. The best metallic iron for medicinal use. Dose, from two to six grains, several times a day; to be given in the form of pill.

Precipitated Carbonate of Iron (*Ferri Subcarbonas*). — This is a reddish powder, insoluble in water. It is tonic, alterative, and emmenagogue, and is used in neuralgia, chorea, chlorosis, anemia, epilepsy, scrofula, etc. Dose, five to thirty grains, three times a day, to be taken in a little water.

Protoxide of Iron (*Ferri Protoxidum*). — This is of a dark blue color, and has a tendency to absorb oxygen from the air, which converts it into the sesquioxide. It is a valuable preparation of iron. Dose, from two to six grains, three times a day.

Solution of Protoxide of Iron. — The protoxide of iron being more readily absorbed and assimilated, and agreeing better with the stomach, than any other preparation of this metal, has led to a general desire for this salt in some eligible form, protected from the chemical changes to which it is so liable. This desire has been met by Dr. James R. Nichols & Co. of this city, who, by a new method of chemical manipulation, have prepared an unchangeable solution of it, in the form of an elegant syrup, which is permanent in form, pleasant to the taste, and free from the inky flavor peculiar to iron preparations. Dr. Nichols, one of the most reliable practical chemists in the country, has conferred a benefit upon the profession by preparing this syrup. I have had the pleasure of using it, with peculiar satisfaction. Dose, from one to two teaspoonfuls, three times a day.

Solution Protoxide Iron, with Rhubarb and Columbo. — This is a composition of protoxide of iron with vegetable tonics; a combination long desired, but just now, for the first time effected, by Dr. James R. Nichols & Co. of this city. As a remedy in many forms of dyspepsia, it must prove of great value.

Solution Protoxide Iron, with Quinine. — This has become a remedy

of established reputation. Quinine combined with iron, particularly with the protoxide, must have great advantages as a chalybeate tonic. This is one of the reliable preparations of Dr. Nichols. Each tablespoonful contains half a grain of quinine.

Solution Protoxide Iron, with Iodide of Potassa. — In this preparation, the valuable alterative properties of iodide of potassium, are connected with iron. It is therefore alterative and tonic, and may be used in scrofulous and other weakened conditions of the system. It is a remedy of decided merit. Three grains of the iodide of potassium are contained in each tablespoonful. This is also prepared by Dr. James R. Nichols & Co.

Sulphate of Iron (*Ferri Sulphas*). — This is in the form of transparent crystals, of a pale, bluish-green color, and efflorescent in the air. It has a styptic taste, and is soluble in about twice its weight of cold water, but insoluble in alcohol. It is astringent and tonic. In large doses, it produces nausea and griping of the bowels. Useful in scrofula, and as an astringent, in passive hemorrhages, sweats, diabetes, chronic mucous catarrh, leucorrhœa, and gleet. As a tonic, it is useful in dyspepsia.

Syrup of Iodide of Iron (*Syrupus Iodidi Ferri*). — This is an elegant preparation of iodine and iron, and is given in all debilitated conditions of the system, when there is a taint of scrofula. Dose, from twenty to fifty drops, well diluted, at the moment of taking, with water.

Syrup of Iodide Iron and Manganese. — This is of a light straw color, prepared from protosulphate of iron, protosulphate of manganese, and iodide of potassium. It is a remedy of unsurpassed efficacy in anæmic, scrofulous, syphilitic, and cancerous affections. It is considered superior to the syrup of iodide of iron. This is another of Dr. J. R. Nichols & Co.'s valuable preparations. Dose, from ten to sixty drops.

Tartrate of Iron and Potassa (*Ferri et Potassæ Tartras*). — This is in the form of beautiful shining scales, of a dark ruby color, of a slightly chalybeate taste, and very soluble in water. It is one of the mildest of the salts of iron, and is considerably used in scrofula, weakness of the bowels, general debility, etc. It is much used of late, as a remedy for syphilis, both externally and internally. The dose is ten to thirty grains in solution.

Tincture of Muriate of Iron (*Tinctura Ferri Chloridi*). — This has a reddish-brown, yellowish color, a sour and very styptic taste, and an odor like muriatic ether. It is one of the most active and certain preparations of iron, generally agreeing with the stomach, and much employed for purposes for which iron is used. It is useful in scrofula, gleet, and leucorrhœa; also in hemorrhages from the womb, kidneys, and bladder, of a passive character. Dose, from ten to thirty drops, gradually increased to one or two drams, two or three times a day. It should be given diluted with water.

Valerianate of Iron. — This salt is in the form of a dark-red powder, having a faint odor, and a taste of valerianic acid. It is soluble in alcohol, and insoluble in water. Given in hysterical affections, complicated with chlorosis. Dose, one grain, several times a day.

Isinglass (*Ichthyocolla*). — A gelatinous substance, prepared from the bladder of fishes. It is soluble in alkaline solutions, and diluted acids. In boiling, it dissolves, and forms a jelly upon cooling, in which form it is chiefly used as a nutritive diet for the sick.

Jalap (*Ipomœa Jalapa*). — This is a Mexican plant. Its root is an active cathartic, producing liquid stools, more or less griping. United with cream of tartar, it becomes a hydragogue, and is useful in dropsy. The dose is from fifteen to thirty grains.

Preparations. — Fluid extract, dose, a quarter to one dram; solid extract, dose, three to eight grains; tincture, two ounces to the pint diluted alcohol, dose, one to two and a half drams; jalapin, the active principle, dose, one to two grains.

Juniper (*Juniperis Communis*). — This evergreen shrub is a native of Europe, and is naturalized in some parts of this country. The berries, which are the part used, are wrinkled, of a dark-purple color, about the size of a pea. They are gently stimulant and diuretic, and have been used in scurvy, and inflammation of the bladder, chiefly in connection with more active diuretics. The oil of juniper obtained from the berries is used for similar purposes. Five minims of the oil, mixed with one fluid dram of sweet spirits of nitre, and given three times a day, is valuable in dropsy. Dose of the berries, from one to two drams; of the oil, from five to fifteen drops.

Kino. — This is the hardened juice of an East Indian tree, *Pterocarpus Marsupium*. There are several varieties of it. It is a powerful and valuable astringent, and is much used in diarrhœa, not attended with inflammation. Opium is often united with it, and it is a favorite addition to chalk mixture. It is also used in chronic dysentery, leucorrhœa and diabetes. It may be used in the form of powder, infusion, or tincture. Dose of the powder, ten to thirty grains; of the tincture, one or two fluid drams; the infusion is useful as an injection, in leucorrhœa and gonorrhœa. The powder is sometimes sprinkled with advantage on indolent and flabby ulcers.

Ladies' Slipper (*Cypripedium Pubescens*). — The fibrous roots are the parts used of this plant. It is tonic, nervine, and antispasmodic, and is employed in nervous headache, and other nervous affections, as excitability, hysterics, neuralgia, etc.

Preparations. — Fluid extract, dose, half a dram to a dram; solid extract, dose, five to fifteen grains; tincture, two ounces to a pint of diluted alcohol, dose, half an ounce to an ounce; cypripedin, the active principle, dose, two to four grains. The following is a useful preparation for producing sleep, in wakeful and excited conditions: fluid extract ladies' slipper, one ounce; fluid extract pleurisy root, one ounce; fluid extract skunk cabbage, one ounce; fluid extract

scullcap, one ounce; mix; dose, half a dram to a dram, three times a day.

For sick and nervous headache, dependent on an acid stomach, the following is useful: fluid extract ladies' slipper, half an ounce; fluid extract catnip, half an ounce; fluid extract scullcap, half an ounce; water, one pint; mix; dose, one and a half to three drams.

Lead (*Plumbum*). — Lead acts upon the system as a sedative and astringent. Internally, it is used for the purpose of reducing the force of the circulation, and for restraining improper bleeding, and other excessive discharges. Externally, it is employed to subdue inflammation. It should not be excessively used; for, if taken internally for a long time, it injures the nervous system, and brings on apoplexy, palsy, and particularly lead colic. Nature generally gives notice when it is doing mischief, by drawing a *blue line around the edge of the gum.* The preparation of lead chiefly used in medicine is the following:

Acetate of Lead (*Plumbi Acetas*). — This is known by the name of *sugar of lead*, and is a white salt, crystallized in brilliant needles. It has first a sweetish, and then an astringent taste. In medicinal doses, it is a powerful sedative and astringent; in large ones, an irritant poison. It is principally used, internally, for bleeding from the lungs, bowels, and womb. The dose is generally two grains, united to half a grain to a grain of opium, in the form of pill. Externally, it is employed in form of solution, and applied to inflamed surfaces with cloths. Four grains of sugar of lead, and four of pulverized opium to the pint of water, makes a good lotion for various purposes.

Lemon (*Citrus Limonum*). — This is a well-known tropical fruit, the juice of which has a grateful acid taste, which is much used in fevers and inflammatory complaints, to form the agreeable drink called lemonade. The oil of lemon, obtained from the fresh rind of the fruit, is chiefly used in perfumery, and to render the taste of medicines more agreeable.

Lettuce (*Lactuca Sativa*). — The medicinal properties of this garden plant are contained in the milk. It is given when opium disagrees with the patient, to allay cough and irritability.

Preparations. — Fluid extract, dose, half a dram to two drams; solid extract, dose, two to five grains. The following is a useful compound syrup: fluid extract lettuce, two ounces; fluid extract poppy, four ounces; simple syrup, ten ounces; mix; dose, half a dram to a dram.

Life Root (*Senecio Aureus*). — This is a perennial plant, growing on the banks of marshy creeks, in the Northern and Western States, and sometimes called *Ragwort.* Both the root and herb are diuretic, pectoral, diaphoretic, and tonic, considerably valued as a remedy in gravel, and other urinary affections, particularly strangury. It is useful for promoting menstrual discharges.

Preparations. — Fluid extract, dose, half a dram to a dram; infusion, dose, one to four ounces; senecin, the active principle, dose,

three to five grains. For chlorosis, accompanied by absence of the menses, the following is a useful preparation: senecin, aletrin, and sulphate of iron, four grains each. Mix, and divide into two grain powders. Six grains each of senecin and geraniin, mixed, and taken in doses of two to four grains, has a good effect in restraining an immoderate flow of the menses. In painful menstruation the following is a good pill: senecin, two grains; quinine, six grains; solid extract belladonna, three grains; make into ten pills, and take one every three hours, till the pain is subdued.

Lime (*Calx*). — This is one of the alkaline earths, and is an abundant natural production. It is used in several forms in medicine, of which the following are the chief.

Chloride of Lime (*Calx Chlorinata*). — This is a moist, grayish-white substance, having the odor of chlorine, and possessing powerful bleaching properties. Externally used, it is disinfectant, and, dissolved in water, is applied with advantage to ill-conditioned ulcers, burns, chilblains, and eruptions of the skin, also as a gargle in putrid sore throat, and as a wash for ulcerated gums, and to purify the breath. It has been used with advantage in dysentery, both by mouth and injection, to correct the fetor of the stools.

Lime Water (*Aqua Calcis*). — This is made by dissolving four ounces of lime in a gallon of water, and letting the solution stand in a covered vessel, and pouring off the clear liquor when it is wanted for use. It is antacid, antilithic, tonic, and astringent, valuable in all complaints attended with acidity of the stomach. United with milk, and used as the sole diet, it is sometimes the only remedy for chronic diarrhœa of long standing. Dose of lime water, half an ounce to two ounces.

Liquorice (*Glycyrrhiza Glabra*). — This grows in the south of Europe and Asia. The root is the part used. It is demulcent and expectorant, and is useful in cough, chronic bronchitis, and irritations of the mucous surfaces generally. The pulverized root, united with an equal amount of sulphur, and a little molasses, is a valuable preparation for coughs. The black extract may be used for the same purposes as the root.

Liverwort (*Hepatica Americana*). — An indigenous plant, growing in woods, upon the sides of hills and mountains. The leaves withstand the cold of winter, and the flowers appear early in the spring. The whole plant is medicinal. It is a mild demulcent tonic and astringent, and has been used in fevers, liver complaints, bleeding from the lungs, and coughs.

Preparations. — Fluid extract, dose, two to three drams; infusion, four ounces to the pint of water, to be taken freely.

Lobelia (*Lobelia Inflata*). — This weed grows throughout the United States; both its seeds and leaves are used in medicine. The plant is emetic, expectorant, sedative, and antispasmodic. As an emetic, it is generally used in combination with other articles for that purpose.

It is of great advantage in spasmodic asthma, as well as in bronchitis, croup, hooping-cough, and other throat and chest affections. Whenever relaxation is required to subdue spasm, or for other purposes, lobelia will be found useful.

Preparations. — Fluid extract, dose, as an expectorant, ten to sixty drops; as an emetic, one fourth of a dram to a dram; tincture, two ounces to a pint of diluted alcohol, dose, as an expectorant, one to three drams, as an emetic, half an ounce; infusion, dose, an ounce every half hour till vomiting ensues; lobelin, the active principle, dose, half a grain to a grain and a half. The following mixture will be found excellent, as an expectorant and sudorific, in spasmodic croup, hooping-cough, and asthma, and for subduing mucous inflammation about the throat and air passages: tincture of lobelia, half an ounce; tincture of bloodroot, two ounces; oil of spearmint, half a dram; empyreumatic syrup, five ounces; dose, half a dram every two hours. A poultice made of lobelia, elm bark, and weak lye, relieves sprains, bruises, rheumatic pains, erysipelatous inflammations, and poison from ivy or dogwood.

FIG. 209.

LADIES' SLIPPER.

FIG. 210.

LOBELIA.

Logwood (*Hæmatoxylon Campechianum*). — This tree is a native of tropical America. The wood is used in medicine. It is tonic and astringent, and is used with advantage in diarrhœa, dysentery, and in the relaxed state of the bowels after cholera infantum. Used freely with other treatment, it also benefits constitutions broken down by disease or dissipation.

Preparations. — Fluid extract, dose, half a dram to a dram; solid extract, dose, five to thirty grains; infusion, half an ounce to a pint of water, dose, four drams every three or four hours, in diarrhœa.

Magnesia (*Magnesia Usta*). — Calcined magnesia is obtained from carbonate of magnesia, by exposure to a strong heat. It is a white, inodorous, light powder, of a feeble alkaline taste. It is antacid and laxative, and is much used in dyspepsia, sick headache, gout, and in other complaints attended with sour stomach and costiveness; likewise a favorite remedy in complaints of children. Dose, as a laxative.

from thirty to sixty grains; as an antacid, or antilithic, ten to thirty grains, once or twice a day.

Carbonate of Magnesia (*Magnesiæ Carbonas*). — This is prepared from sulphate of magnesia, by carbonate of soda. It is antacid, and when it meets with acid in the stomach and bowels, it is laxative.

Sulphate of Magnesia (*Magnesiæ Salphas*). — Obtained from sea-water. This is the well-known *Epsom salts* and is purgative and diuretic. Used in all cases which require purgatives. It generally operates without griping, and, when united with an acidulated infusion of roses, will remain on the stomach when all other things are rejected. The less it is diluted, the better and more easily it operates, provided a draught of warm water be taken an hour afterwards. It may be made to act as a diuretic, by keeping the skin cool, and walking about after it has been taken.

Male Fern, (*Aspidium Filix Mas*). — This perennial plant is found in both Europe and America, also in Asia and northern Africa. The root, which is the medicinal part, should be gathered during summer, as the active principle is more abundant at that season than any other. It is also said to deteriorate by age, and become nearly worthless in two years. It is slightly tonic and astringent, but its chief value consists in its power to destroy and expel the tapeworm.

Preparations. — Solid extract, dose, nine to fifteen grains. The following compound pills are adapted to the destruction of the tapeworm: solid extract male fern, two scruples; gamboge, fourteen grains; calomel, fourteen grains; scammony, eighteen grains. Mix, and divide into twenty pills. Dose, two to four pills.

Mandrake (*Podophyllum Peltatum*). — This is exclusively an American plant. The root is the medicinal part. It is cathartic, alterative, anthelmintic, hydragogue, sialagogue, and, in large doses, emetic. It stimulates and quickens the action of the liver and kidneys, promotes expectoration, and determines the blood to the surface. Combined with cream of tartar, it produces watery stools, and is useful in dropsy. It is used in jaundice, dysentery, diarrhœa, bilious, remittent, and intermittent fevers, puerperal fever, typhoid fever, and all glandular enlargements. But it has a more particular action upon the liver, and is especially useful in derangements of that organ.

The severity of its action seems to be the only objection to its very extensive use. Its harshness, however, may be much lessened by its combination with castile soap, alkalies, ginger, or caulophyllin.

Preparations. — Fluid extract, dose, half a dram to a dram; compound fluid extract, dose, one to two drams; solid extract, dose, three to twelve grains; tincture, three and a half ounces to one pint of alcohol, dose, one to four drams; podophyllin, the active principle, dose, as an alterative, one eighth to a quarter of a grain; as a cathartic, one to two grains.

Manna. — This is the concrete juice of the tree called *Ornus Europæa*, growing in Sicily, Calabria, and Apulia, as well as of several other species of tree. Manna is a gentle laxative, operating mildly,

though sometimes producing wind and pain. It is considerably used as a gentle physic for children, and women in the family way. The usual way of prescribing it is in connection with senna, rhubarb, magnesia, or the neutral salts. Being sweet, it conceals the taste of these remedies, in some measure, while it adds to their purgative effect. Dose of manna, for a grown person, from one to two ounces; for a child, from one to four drams, according to age.

Marsh Rosemary (*Statice Caroliniana*). — This plant grows on the coast from Maine to Georgia. The root of it is the medicinal part. A decoction of it is much used in diarrhœa, dysentery, etc., also as a gargle in ulcerated sore mouth, and the throat affection of scarlet fever, and as an injection in gleet, whites, and falling of the womb, and bowel. Dose of the decoction, one or two tablespoonfuls, every hour or two.

FIG. 211.

MANDRAKE.

FIG. 212.

MARSHMALLOW.

Marshmallow (*Althœa Officinalis*). — A perennial plant, growing in salt marshes, and other moist places, in Europe. The root is the medicinal part, and its properties are those of a demulcent. A decoction of it is used in irritations and inflammations of mucous membranes, as in inflammation of the lungs, stomach, bowels, and bladder, and some affections of the kidneys. The powdered root, and also the leaves and flowers, are sometimes employed in the form of poultice.

Mastich. — This is the hardened gum or resin which flows from incisions in the small tree or shrub *pistacia lentiscus*, growing upon the borders of the Mediterranean. It is not much used in medicine, but is chiefly employed in manufacturing a brilliant varnish. I introduce it here principally for the purpose of recommending the following use of it in carious teeth, — particularly in those new parts of the country where dentistry is not much known. Dissolve, in a well-stopped bottle, four parts of mastich in one part of sulphuric ether. Saturate with this solution a small piece of cotton of the size of the cavity in the tooth, and then, having cleansed and dried the cavity, gently press the cotton into it. The ether will soon evaporate, and leave the gum to attach itself to the sides of the tooth, and protect its inner surfaces from the action of the air and food.

Matico (*Piper Angustifolium*). — The leaves of this plant are styptic, and somewhat stimulant and tonic. The leaves brought in contact with a bleeding wound, have considerable power to arrest the flow of blood.

Preparations. — Fluid extract, dose, half a dram to a dram; tincture, four ounces to a pint of diluted alcohol, dose, two drams to an ounce; infusion, half an ounce to a pint of water, dose, one to two ounces.

Meadow Saffron (*Colchicum Autumnale*). — This is a native of the temperate parts of Europe, where it grows wild in moist meadows. The roots and seeds are used. Colchicum is justly regarded as a valuable remedy in gout and rheumatism, in which it is much and chiefly used. It is thought, also, to act upon the nervous system, allaying pain, and producing other sedative effects. When not carried off by the bowels, it produces sweating, and is occasionally diuretic and expectorant. Dose of the dried root, from two to eight grains.

Preparations. — Fluid extract of root, dose, three to twelve drops; fluid extract of seeds, dose, five to fifteen drops; tincture, four ounces to twelve ounces diluted alcohol, dose, ten drops to half a dram; syrup, two ounces to fourteen ounces simple syrup, dose, one third of a dram to a dram; wine, three ounces of root to a pint of sherry wine, dose, thirty to forty drops.

Monk's Hood (*Aconite*). — This is anodyne, sedative, and diaphoretic. The leaves and root are generally used separately. It is useful in inflammatory diseases, neuralgia, epilepsy, paralysis, gout, and particularly in fevers.

Preparations. — Fluid extract, dose, two to six drops; solid extract, dose, one quarter of a grain to a grain; tincture, eight ounces of the root to a pint of alcohol, dose, three to eight drops.

A preparation composed of one dram of the tincture of aconite root, and two ounces of the tincture of black cohosh, and taken in doses of one teaspoonful every four hours, has great power in relieving the various forms of neuralgia, and also chronic rheumatic pains, particularly among old people.

For nervous headache, irritability, restlessness, and wakefulness, the following combination of aconite is useful:

Solid extract of aconite, half a dram; solid extract of stramonium, four grains; valerianate of quinia, one scruple. Mix, and divide into sixty pills, of which one is to be taken every two, three, or four hours, according to symptoms.

Motherwort (*Leonurus Cardiaca*). — This perennial plant is supposed to be a native of Tartary, and introduced into this country. It is considerably used in domestic practice, for nervous complaints, and many chronic disorders attended with restlessness, disturbed sleep, pains of the nerves, and affections of the liver. A warm infusion of the tops and leaves is useful in restoring menstrual suppression from colds.

Preparation. — Solid extract, dose, three to six grains. Combined with blue cohosh and skunk cabbage, the solid extract is a nervine, antispasmodic, and emmenagogue.

FIG. 213.

MEADOW SAFFRON.

FIG. 214.

MOUNTAIN LAUREL.

Mountain Laurel (*Kalmia Latifolia*). — The laurel is found in most parts of the United States, on hills and mountains, flowering in June and July, and is very ornamental. It is sometimes called *big ivy*, or *calico bush*. The *narrow-leaf laurel*, or *sheep laurel*, *kalmia angustifolia*, is also common, and similarly medicinal. The leaves of these plants are used in medicine, and produce, when taken in large doses, vertigo, dimness of sight, etc. In medicinal doses, they are sedative and astringent. The saturated tincture is the best form of administration, which may be taken in ten to twenty-drop doses, every two or three hours, in syphilis, active hemorrhages, hypertrophy of the heart, and jaundice.

Mullein (*Verbascum Thapsus*). — The leaves and flowers of this biennial plant are antispasmodic, diuretic, and demulcent. The infusion is frequently used in domestic practice, and is useful in colds, coughs, bronchitis, etc.; and may be drank freely. The leaves are sometimes boiled in milk, sweetened, and taken for bowel complaints. The leaves, dipped in hot vinegar and water, are very useful, applied as a fomentation in mumps, acute inflammation of the tonsils, and malignant sore throat; a handful of them may also be placed in an old teapot, with hot water, and the steam be inhaled through the spout, in the same complaints.

Mustard. — The seeds of the white mustard, *sinapis alba*, were, a few years ago, much recommended as a cure for constipation of the bowels; and, swallowed whole, in teaspoonful, or even, in some obstinate cases, in tablespoonful doses, they afford a wholesome stimulus to the bowels, and accomplish some good. The ground-mustard is a valuable condiment to eat in small quantities, at dinner, in dyspeptic cases. It finds its most important uses, however, as a prompt and almost instantaneous emetic in cases of poisoning, and also as a valuable counter-irritant, when applied externally. The *volatile oil of mustard*, one part, and ten parts of sweet oil, may be applied to the skin, instead of the mustard poultice, and with similar results.

Myrrh. — The tree *balsamodendron myrrha*, growing in Arabia, etc., yields a juice which hardens into a gum-resin, called myrrh. This pleasant, aromatic gum, is stimulant, tonic, antiseptic, emmenagogue, and expectorant. It is employed in chronic bronchitis, consumption, chlorosis, absence of the menses, etc. It is generally combined with iron and other tonics, and in amenorrhœa, is frequently combined with aloes. Locally, it is considerably used as a wash to improve spongy gums, ulcers of the mouth, etc. The dose is from ten to thirty grains, to be given in pill, or in powder suspended in water. The tincture of myrrh is a useful external application.

Naptha. — This belongs to the class of native inflammable substances, called bitumens. It is a transparent, yellowish white, very light and inflammable liquid, and is found abundantly in Persia. Said to have been used with advantage in Asiatic cholera. It is composed exclusively of carbon and hydrogen. Dose, from ten to twenty drops, given in half a glass of wine, or mint water. During the formation of coal gas, an artificial napthia is obtained, which, when purified, has the property of dissolving India rubber.

Medicinally, it is chiefly used for purposes of inhalation, in affections of the chest.

Naphthaline. — This is obtained from a distillation of coal tar. It is soluble in ether, alcohol, naphtha, and oils, but not in water. It is an excellent expectorant, particularly in cases of impending suffocation of old persons, from chronic bronchitis; also in asthma and other pectoral affections. Being stimulating, it is improper in acute bronchitis, and pulmonary inflammation. The dose is from ten to thirty grains, given in emulsion, or syrup, every fifteen minutes, until abundant expectoration takes place. A scruple of napthaline, mixed with five drams of lard, makes a good ointment for psoriasis, dry tetter, and leprosy.

Nitrate of Silver (*Argenti Nitras*). — Nitrate of silver is a solution of silver in nitric acid, and commonly passes under the name of lunar caustic. It is both in the form of small cylindrical rods, and of crystals, the latter being more pure than the former.

As an internal remedy, nitrate of silver is tonic and antispasmodic, and is given chiefly in nervous diseases, as epilepsy, St. Vitus's dance, and neuralgia of the heart; also in some forms of dyspepsia, attended with pain in the stomach, and vomiting. The dose is from one fourth to half a grain, in the form of pill. It should never be taken regularly as an internal remedy, more than three months, as it is apt, after long use, to change the skin to an indelible slate blue.

But nitrate of silver is most used as an external remedy, in pharyngitis, laryngitis, tracheitis, and other chronic and acute inflammations of mucous membranes. For reducing these inflammations, it is very nearly a specific; certainly, it is altogether the best remedy we have. It fails in some few cases; but when skilfully used it *never* does harm. The solutions to be applied to the throat, require to have a strength of from fifteen to a hundred and twenty grains to the ounce of soft

water. A solution containing one to four or more grains to the ounce of water is often used in inflammations of the eye, gonorrhœa, etc.

Nitre (*Potassæ Nitras*). — Nitre, which also passes under the name of *nitrate of potassa*, and *saltpetre*, is both a natural and artificial production. As a medicine, it is refrigerant, diuretic, and diaphoretic, and is much used in inflammatory diseases. It increases the secretion of urine and sweat, and lessens the heat of the body, and the frequency of the pulse. United with tartar emetic and calomel, it forms the well-known nitrous powders, which promote most of the secretions, particularly those of the liver and skin. One of these powders, constituting a dose, to be given every two or three hours, is composed of eight grains of nitre, one fourth of a grain of calomel, and one eighth of a grain of tartar emetic.

Sweet Spirit of Nitre (*Spiritus Ætheris Nitrici*). — Sweet spirit of nitre is diuretic, diaphoretic, and antispasmodic. It is deservedly much esteemed as a medicine, and is extensively employed in febrile diseases, either alone, or in union with tartar emetic, or with spirit of mindererus. It is often a grateful stimulus to the stomach, relieving nausea and vomiting, and promoting sleep. It acts especially upon the kidneys, augmenting the secretion of urine, and is often given in conjunction with squills, digitalis, and acetate of potassa. The dose is a teaspoonful, given in water every two or three hours.

Nutmeg (*Myristica Moschata*). — The nutmeg is from a tree growing in the Molucca Islands. It is stimulant and carminative, and somewhat used to remove flatulency, as well as to render other medicines palatable; it is most employed, however, to flavor drinks, and articles of diet. In large doses, it is poisonous, producing stupor and delirium.

Nux Vomica (*Strychnos Nux Vomica*). — The tree which produces nux vomica, grows in Bengal, Malabar, and the coast of Coromandel, and in other regions. The seeds are the medicinal part.

Fig. 215.

NUX VOMICA.

Nux vomica is an emphatic excitant of the brain and spinal cord, and, in large doses, is an active poison; frequently repeated in small doses, it is tonic, diuretic, and slightly laxative.

Given in full doses, it is apt to produce muscular contraction, as in lock-jaw, together with frequent starts and twitches, as if from electric shocks. It is much employed in treatment of paralysis, and is more beneficial in general than in partial palsy.

Preparations. — Fluid extract, dose, two to ten drops; solid extract, dose, half a grain to two grains; tincture, four ounces to the pint of alcohol, dose, five to fifteen drops; strychnia, commonly called strychnine, the active principle, dose, one sixteenth to one eighth of a grain.

Oil of Cajeput (*Oleum Cajuputi*). — This oil is obtained from the

leaves of the East Indian tree cajuputi. It is diaphoretic and antispasmodic, and a powerful diffusive stimulant. Given in cramps of the stomach and bowels, colic, flatulency, hysterics, and chronic rheumatism. It is considerably used as an ingredient in liniments, to be applied externally in rheumatism, and neuralgia. Dose, from one to five drops, on sugar.

Oil of Turpentine (*Oleum Terebinthinæ*). — This is generally called spirits of turpentine, and is obtained by distilling turpentine. As a medicine, it is stimulant, cathartic, diuretic, anthelmintic, and astringent. In large doses, it causes strangury, and other unpleasant symptoms. The dose is from five to thirty drops, repeated every two or three hours. Fifteen drops, taken every fifteen minutes or half hour, powerfully restrains bleeding from the lungs, and is, perhaps, the best remedy we have for this frightful accident.

It is also very efficacious in checking other hemorrhages. Externally, it is used considerably as an ingredient in liniments and rubefacients, in rheumatism, paralysis, etc. Combined with linseed oil, it is much used for burns and scalds.

Olive Oil (*Oleum Olivæ*). — This oil, often called *sweet oil*, is expressed from the fruit of the olive tree, *Olea Europeæ*. It is nutrient and emollient, and in doses of one to two fluid ounces, laxative. It is much employed as a constituent of cerates, liniments, and plasters.

Onion (*Allium Cepa*). — The medicinal properties of the onion are much like those of garlic. The juice, mixed with sugar, is used to some extent as a remedy for the coughs and colds of infants. Roasted onions, applied as a poultice, hasten the suppuration of boils, tumors, etc. They are also useful, in some cases, applied as drafts to the feet.

Opium. — This is the hardened juice of the unripe seed of the poppy, *Papaver Somniferum*. It is a stimulant narcotic. A moderate dose increases the fulness and frequency of the pulse, augments the warmth of the skin, invigorates the muscular system, quickens the senses, animates the spirits, and gives energy to the mental faculties. Its operation is directed with special force to the brain, which it sometimes excites to intoxication and delirium, which excitement subsides in a short time, and is followed by a delightful calmness, and placidity of mind, all care and anxiety being banished, and the thoughts yielded to the control of pleasing fancies. At the end of an hour or more, this reverie is succeeded by sleep, which, at the end of eight or ten hours, passes off, and is followed by headache, nausea, tremors, and other nervous disturbances. Large doses are followed by shorter periods of exhilaration and excitement, and by more protracted sleep.

Opium is used in medicine to produce gentle perspiration, relieve pain, and lessen nervous excitability in all febrile and inflammatory diseases; also as an antispasmodic in hysterics, colic, convulsions, coughs, etc. It should not be used in cases of constipation of the bowels. A solution, composed of two grains of opium to one ounce of water, is sometimes a valuable injection in gonorrhœa and spasmodic stricture. Dose, as a stimulant, one quarter to one half a grain.

as a narcotic, one to two grains; in some spasmodic affections, it is given in very large doses.

Morphia, generally called *morphine*, is one of the alkaloid principles of opium. It is used under the various forms of *sulphate*, *muriate*, *acetate*, and *valerianate* of *morphia*,—all having the general properties of opium, and are given for similar purposes, in doses of one eighth to one quarter of a grain. One sixth of a grain is equal to one grain of opium.

Strong coffee is an excellent antidote to the poisonous effects, both of opium and morphia. A solution of morphia may be made by adding ten grains of the salt to one fluid ounce and a half of distilled water, and half an ounce of diluted alcohol, and then adding two drops of sulphuric acid, if it be the sulphate of morphia, or two drops of acetic acid, if it be the acetate of morphia, or two drops of muriatic acid, if it be the muriate of morphia. The effects of morphia may be obtained by sprinkling some of it on a blistered surface.

Orange Peel (*Aurantii Cortex*). — The orange is the fruit of a tree belonging to the tropical climates. Orange juice is a pleasant refrigerant, useful in fevers, and particularly in scurvy. Sick persons sucking the juice of the orange, should be careful not to swallow any of the skinny portion, or the peel. The peel of the orange is chiefly employed to give a pleasant flavor to other medicines, and to prevent their nauseating properties. It is a mild tonic, carminative, and stomachic, and improves the bitter infusions and decoctions of gentian, quassia, columbo, and peruvian bark. Orange peel should never be given in substance.

Preparations. — Fluid extract, dose, half a dram to two drams; tincture, one ounce and three quarters to a pint of diluted alcohol, chiefly used as an addition to infusions, etc.; syrup, two ounces fluid extract or tincture to a pint of simple syrup, used with water as an agreeable drink.

Origanum (*Origanum Vulgare*). — A perennial herb growing in Europe and this country. The warm infusion of it causes perspiration, and promotes the menstrual discharge, when interrupted by a cold. The oil of origanum is a very useful ingredient, in several stimulant and rubefacient liniments.

Parsley (*Petroselinum Sativum*). — The root of this biennial plant is aperient and diuretic, and is used in dropsy, scarlet fever, and diseases of the kidneys; also in retention of the urine, gonorrhœa, and strangury. The dose of the infusion is from two to four fluid ounces, two or three times a day.

The bruised leaves are applied with advantage to contusions, swelled breasts, and enlarged glands.

Partridge Berry (*Mitchella Repens*). — This perennial, evergreen, creeping herb, grows in dry woods and swampy places throughout the United States, and has white, fragrant flowers in June and July. It is parturient, diuretic, and astringent, and is used in dropsy, sup-

pression of urine, and diarrhœa. It acts as a tonic upon the reproductive organs, giving tone and vigor to the womb, and making labor less tedious. Dose of the decoction, from two to four fluid ounces, two or three times a day.

Peach (*Amygdalus Persica*). — The leaves of the peach are sedative and slightly laxative, and are used in inflammations of the stomach and bowels; likewise in irritable bladder, hooping-cough, sickness at the stomach, and dysentery. They are used in the form of cold infusion, a tablespoonful being a dose, to be taken every hour or two. A good tonic is made by adding four ounces of the bruised kernels to a quart of honey.

Pennyroyal (*Hedeoma Pulegioides*). — Pennyroyal is a gently stimulant aromatic; it relieves wind colic and sick stomach, and qualifies the action of other medicines. Like most aromatic herbs, it has the property, when given as a warm infusion, of promoting perspiration, and of exciting the menses, when the system is already disposed to the effort. In cases of recent suppression, it may be given at bedtime as a warm tea, after bathing the feet in warm water. The oil of pennyroyal has the properties of the herb.

FIG. 216.

PENNYROYAL.

FIG. 217.

PERUVIAN BARK.

Peppermint (*Mentha Piperita*). — The peppermint is a native of England, where it is largely cultivated, as it is to some extent in this country, for the sake of its essential oil. It is a valuable herb, having a strong aromatic smell, and a pungent, warming taste. It may be used in the form of tea, which, when largely drank, imparts warmth to the system. It is valuable in colds, flatulent colic, hysterics, spasms, cramps in the stomach, nausea, and vomiting, and to disguise unpleasant medicines.

The peppermint furnishes an essential oil, which, dissolved in alcohol, forms the essence of peppermint. The dose of this is fifteen to thirty drops, on a lump of sugar, or in sweetened water, warm or cold.

Persimmon (*Diospyros Virginiana*). — This is a tree growing in the Southern and Middle States. The bark and unripe fruit are used in medicine, — being astringent and tonic. Persimmon has been found useful in chronic diarrhœa, chronic dysentery, hemorrhage from the womb, and fever and ague. It is used in the form of infusion and syrup, in doses of a tablespoonful, every two or three hours. The infusion is also used as a wash and gargle in sore mouth and throat, and as an injection in whites.

Peruvian Bark (*Cinchona*). — This valuable bark is derived from several species of the cinchona tree, on the western coast of South America. The remedy is said to have been first introduced into Europe in 1640, by the Countess of Cinchon, wife of the Viceroy of Peru, on her return to Spain.

There are three varieties of this bark: the pale, the red, and the yellow. The pale bark is least liable to offend the stomach, and is perhaps the best as a general tonic; but for the treatment of fever and ague, the red and the yellow are both preferable to the pale, and the red is considered better than the yellow.

Cinchona is tonic and antiperiodic, and is much used, and with great success, in all periodical diseases, as fever and ague, remittent fever, neuralgia, and epidemic diseases; also in chronic diseases attended with debility, as scrofula, dropsy, and affections of the skin. Dose of the powdered bark, as a tonic, from ten to sixty grains; as an antiperiodic, from twenty to a hundred grains.

Preparations. — Fluid extract, dose, half a dram to a dram; compound fluid extract, dose, half a dram to a dram; tincture, four ounces to one pint diluted alcohol, dose, one to four drams; infusion, dose, one to two ounces. A good compound infusion of cinchona is made by combining one ounce fluid extract with half an ounce of fluid extract of snake-root, two drams of fluid extract of orange peel, one dram of fluid extract of cloves, one dram of carbonate of potassa, and one pint of water. Dose, one to one and a half ounces. The following is a good nervine and tonic for persons of nervous temperaments: fluid extract of cinchona, one ounce; fluid extract of valerian, one ounce; essence of cardamom, two drams; dose, one dram every three hours.

Cinchonia is a white crystalline substance obtained from the peruvian bark. It is sometimes used as a substitute for quinia, in doses of from one to four grains, three times a day.

Sulphate of Quinia is snow white, and in satin-like crystals, having an exceedingly bitter taste. It is completely soluble in water, or alcohol, by adding a few drops of sulphuric acid. It is the chief active principle of cinchona, and has similar properties, namely, febrifuge, tonic, and antiperiodic; it is, however, less apt to nauseate and oppress the stomach. In the treatment of intermittent fevers, it has almost entirely superseded the use of the bark.

Valerianate of Quinia. — This is a combination of quinia and valerianic acid. It is tonic febrifuge and sedative. It is used for head-

ache of a periodic character, and for nervous irritability, wakefulness, restlessness, etc. Dose, from half a grain to two grains.

Petrolium. — This is a blackish liquid bitumen, flowing spontaneously from the earth in Italy, France, West India Islands, etc. As a medicine, it is stimulating, antispasmodic, and sudorific. It is occasionally administered in affections of the chest, when not attended with inflammation. Externally, it is employed in chilblains, chronic rheumatism, paralysis, diseases of the joints, and affections of the skin. It is an ingredient in the well-known remedy called British oil. The petrolium found in the State of New York, and called *Seneca oil*, is extensively used in domestic practice. The dose of petrolium is from thirty drops to a dram.

Phosphorus. — This is a semi-transparent solid, and is flexible, and has a waxy lustre. It is extracted from bones by sulphuric acid. As a medicine in small doses, it acts as a powerful general stimulant; in large doses, as a violent, irritant poison. When taken in substance it causes irritation of the stomach, and should, therefore, always be administered in solution; and even in this form it is objectionable; it is better to resort to the phosphates, and the hypophosphites. Phosphorus, being an element in the composition of the brain, has been given, and with advantage, in the various forms of nervous debility, as consumption, typhus fever, amaurosis, paralysis, and the general breakdown of the vital powers. Phosphorus burns when exposed to the air, and should therefore be kept covered with water.

FIG. 218.

PINK ROOT.

FIG. 219.

PIPSISSEWA.

Pink Root (*Spigelia Marilandica*). — This perennial herb grows in rich soils in the Middle and Southern States. The root is the medicinal part. It is a powerful anthelmintic, and is but little used, except for expelling worms.

Preparations. — Fluid extract, dose, half a dram to a dram and a half; compound fluid extract, dose, half a dram to two drams; fluid

extract of pink root and senna, dose, half a dram to a dram; infusion, half an ounce to a pint of water, dose, two to six ounces.

Pipsissewa (*Chimaphila Umbellata*). — This is a small evergreen plant, growing in the United States, and in Northern Europe and Asia. It is known by the name of *princes' pine*. The whole plant is tonic, diuretic, and astringent, and has proved itself useful in dropsy, general debility, rheumatism, chronic disorders of the kidneys, bladder, urethra, etc.

Preparations. — Fluid extract, dose, one dram; solid extract, dose, ten to twenty grains; infusion, dose, two ounces.

Plantain (*Plantago Major*). — This perennial herb grows both in Europe and America. A strong decoction of the tops and the roots is highly spoken of for syphilis and scrofula; the dose being from two to four fluid ounces, two or three times a day. But the bruised leaves are most useful, when applied to wounds, ulcers, bites of poisonous insects, erysipelas, etc.

Pleurisy Root (*Asclepias Tuberosa.*) — This perennial plant is abundant in the Southern States. The root, which is the part used, is carminative, tonic, and diuretic; used in pleurisy, bronchitis, inflammation of the lungs, acute rheumatism, and dysentery. The warm infusion promotes diaphoresis, without raising the temperature of the body. United with the warm infusion of wild yam root, it is excellent for flatulency and wind colic.

Preparations. — Fluid extract, dose, half a dram to two drams; tincture, four ounces to a pint of diluted alcohol, dose, three to five drams; infusion, dose, one to four ounces; asclepidin, dose, one to five grains. Asclepidin and dioscorein, united in equal parts, make a valuable preparation for flatulent and bilious colic; dose, two to four grains.

FIG. 220.

PLEURISY ROOT.

FIG. 221.

POISON HEMLOCK.

Poison Hemlock (*Conium Maculatum*). — This biennial plant is a native of Europe and Asia, and is naturalized in this country. The leaves and the seeds are used in medicine. Conium is narcotic, anodyne, antispasmodic, and deobstruent; used in neuralgia, asthma, syphilis, chronic rheumatism, and various other affections.

Preparations. — Fluid extract, dose, five to twenty drops; solid extract, dose, half a grain to two grains; tincture, three ounces to a pint of diluted alcohol, dose, thirty drops to a dram; infusion, half an ounce to a pint of water, mainly used as a wash for malignant ulcers, etc.

Poison Oak (*Rhus Toxicodendron*). — The leaves are the medicinal part of this creeping shrub, which is common in this country. The form of using this medicine is that of a saturated tincture, made from the fresh leaves, and to be kept in well-corked vials. It has been found useful in paralysis of the bladder and rectum, in diseases of the eyes and skin, and in chronic rheumatism. Dose of the tincture, from five to ten drops, three times a day. Large doses should be avoided.

Poke (*Phytolacca Decandra*). — A perennial plant, growing in nearly all parts of the country, and called *garget*, *pigeon-berry*, and *scoke*. The root is the part used. It is emetic, cathartic, alterative, and slightly narcotic. It excites the whole glandular system, and is used in syphilis, scrofula, rheumatism, and affections of the skin. The root, buried in hot ashes until soft, and then mashed, and applied as a poultice, is said, in King's Dispensatory, to be unrivalled in felons and various tumors. Dose of the powdered root, as an emetic, twelve grains to half a dram; as an alterative, from two to six grains.

Fig. 222.

POKE.

Preparations. — Fluid extract, dose, ten to thirty drops; solid extract, dose, one to four grains; tincture, four ounces to a pint of diluted alcohol, dose, half a dram to a dram; syrup, two ounces to fourteen ounces of simple syrup, dose, one to two drams; phytolaccin, the active principle, dose, one quarter to one grain. For mercurial and syphilitic pains in the bones, the following pill is useful: solid extract of poke, two drams; solid extract of stillingia, one dram; solid extract of stramonium, eight grains. Mix, and divide into sixty pills, of which one pill is to be taken every one, two, or three hours.

Potassa. — This is used in medicine under the name of caustic potassa. It is made by boiling a solution of potassa in a clean iron vessel until ebullition ceases, and the potassa melts, and then pouring it into cylindrical moulds; when cold it is to be kept in well-stopped bottles. It is a very powerful escharotic, quickly destroying the flesh which it touches, and extending its action deep under the surface. It differs in this respect from nitrite of silver, which only acts upon the surface, and is not, properly speaking, a caustic

Caustic potassa is used for forming issues. The method of using it for this purpose is to cut in a piece of adhesive plaster a hole as large as the desired issue, and then, having stuck this upon the skin,

to apply the end of the caustic, previously moistened, to the opening. This application is to be continued till the life of the part is destroyed, when the caustic must be neutralized by vinegar, or carefully washed off with a wet sponge.

The following preparations of potassa are used in medicine:

Acetate of Potassa (*Potassæ Acetas*). — This is made by the union of acetic acid and carbonate of potassa, and in consequence of its extreme deliquescence when exposed to the air, it is kept in closely-stopped bottles. It is diuretic, deobstruent, and mildly cathartic. It is used in febrile diseases, several skin diseases, such as psoriasis, eczema, and lepra, and particularly in dropsical affections. Dose, as a diuretic, from twenty to thirty grains; as an aperient from two to three drams.

Bicarbonate of Potassa (*Potassæ Bicarbonas*). — This is a solution of carbonate of potassa, saturated with carbonic acid. This acid is diuretic, antacid, and deobstruent; used in dropsy, acidity of the stomach, and glandular obstructions. Dose, ten to thirty grains. Twenty grains dissolved in eight fluid ounces of water, and mixed with four fluid drams of lemon juice, forms a good effervescing draught.

Bitartrate of Potassa (*Potassæ Bitartras*). — This salt is better known as *cream of tartar*, and *super tartrate of potassa*. It is formed from the matter deposited on the bottom and sides of casks, during the fermentation of sour wines. As a medicine it is diuretic, cathartic, and refrigerant. In small doses, it acts as a cooling aperient, gently opening the bowels; in large ones, as a hydragogue cathartic, causing free, watery stools. This property, as well as its power of acting upon the kidneys, causes it to be much used in dropsical complaints. Dissolved in boiling water, allowed to cool, and then sweetened with loaf sugar, it forms a cooling, pleasant, acid drink. This kind of solution, with a little fresh lemon peel added to it, forms the drink called *imperial*. Combined with sulphur, it is often used in skin diseases. Dose, as an aperient, a dram or two; as a hydragogue cathartic, half an ounce to an ounce; as a diuretic in dropsical complaints, a dram and a half to two drams, several times a day. Cream of tartar, powdered rhatany, and myrrh, mixed in equal proportions, form a good preparation for cleansing the teeth.

Carbonate of Potassa (*Potassæ Carbonas*). — Carbonate of potassa is *purified pearlash*, and is frequently called *salt of tartar*. The common saleratus is a composition between the carbonate and bicarbonate. Carbonate of potassa has the same medicinal properties with the bicarbonate, and is used for similar purposes.

Chlorate of Potassa. — This is prepared by passing an excess of chlorine through carbonate of potassa. It is refrigerant and diuretic, and is given in scurvy, scarlet fever, etc., and as a wash in canker in the mouth, and various unhealthy ulcers, and as an injection in leucorrhœa and gleet.

Citrate of Potassa (*Potassæ Citras*). — A grateful, cooling diaphoretic, long and much used in fevers, chiefly in the forms of the *neutral mixture*, and *effervescing draught*.

Solution of Citrate of Potassa (*Liquor Potassæ Citratis*). — This is prepared by taking half a pint of lemon juice, and adding bicarbonate of potassa gradually to it, until it is saturated, then filtering. This passes under the name of *neutral mixture*, *saline mixture*, and *effervescing draught*. It is a valuable refrigerant diaphoretic, well adapted to the hot stage of remittent and intermittent fevers, and indeed to almost all cases of fever, with a dry, hot skin. The dose is a tablespoonful, or half a fluid ounce, which should be diluted when taken, and be repeated every one, two, or three hours, according to the necessities of the case.

Solution of Potassa (*Liquor Potassæ*). — This is a transparent, caustic fluid, which requires to be kept in green bottles, tightly corked. It is antacid, antilithic, and diuretic. It is used in some affections of the skin, and scrofula, but more particularly for scalding of the urethra, in gonorrhœa; in this case, it is well to unite a few drops of laudanum with it. The dose is from fifteen to forty drops, two or three times a day, in half a tumblerful of water. In dyspeptic cases, attended with acidity of the stomach, it may be associated with some simple bitters.

Sulphate of Potassa (*Potassæ Sulphas*). — This is a mild purgative, operating without irritation or pain. As an aperient, it should be given in doses of from a scruple to a dram. Ten grains of rhubarb and one dram of carbonate of potassa, united, and divided into six powders, is an excellent alterative cathartic for children having defective digestion and nutrition, and a tumid state of the abdomen. One powder may be given at a time, as often as may be necessary to open the bowels gently.

Tartrate of Potassa (*Potassæ Tartras*). — This often passes under the name of *soluble tartar*. It is a mild, cooling purgative, operating, as most of the neutral salts do, without much pain, and producing watery stools. It is useful in fevers. Combining it with senna, destroys its tendency to produce griping of the bowels. The dose varies from a dram to an ounce, according to the effect desired.

Potassium. — This is a soft, bluish-white metal. Its union with oxygen, in the proportion of one equivalent of each, forms potassa or potash. The following preparations of it are used in medicine:

Bromide of Potassium (*Potassii Bromidum*). — This is a permanent, colorless salt, having a pungent, saline taste, a little more acrid than common salt, yet similar to it. As a medicine, it is alterative and resolvent, and is used occasionally for secondary syphilis, scrofula, and enlarged spleen. Dose, from three to ten grains, three times a day, in pill or solution. One dram of the bromide of potassium, rubbed up with an ounce of lard, makes an ointment which has been used with some good effect in goitre, and scrofulous affections.

Cyanuret of Potassium (*Potassii Cyanuretum*). — This is eminently poisonous, acting both as a medicine and as a poison, like hydrocyanic acid. It has therefore been recommended as a substitute for that acid. The dose is one eighth of a grain, dissolved in half a fluid ounce of water.

Sulphuret of Potassium (*Potasii Sulphuretum*). — This is called *liver of sulphur*, and *hepar*, being composed of sulphur and potassium. It has been used in chronic bronchitis, asthma, hooping-cough, and rheumatism. Half an ounce to an ounce of it, dissolved in several gallons of warm water, makes a valuable sulphur bath for several skin diseases, as itch, prurigo, etc.

Prickly Ash (*Xanthoxylum Fraxineum*). — This shrub grows in various parts of the United States. The leaves and capsules have a pleasant, aromatic smell. Its medicinal properties are in the bark and berries. The bark is stimulant, tonic, alterative, and sialagogue. It is used to rouse and excite the system, when in a languid state, and for derangements of the liver, rheumatism, and chronic syphilis. It stimulates and strengthens mucous membranes, and is a valuable tonic in low typhoid fever. Applied externally, it improves indolent and malignant ulcers. Dose of the powdered bark, from ten to thirty grains, three times a day.

Fig. 223.

Prickly Ash.

Preparations. — Fluid extract, dose, fifteen to forty-five drops; tincture, four ounces to a pint of diluted alcohol, dose, half a dram to a dram and a half; infusion, half an ounce to a pint of water, dose, half an ounce to two ounces; xanthoxylin, the active principle, dose, two to six grains.

For chronic rheumatism, the following is a good preparation: xanthoxylin, one dram; cimicifugin, one dram; apocynin, one dram; diluted alcohol, one pint; dose, four drams, three times a day.

Prickly Ash Berries are carminative, antispasmodic, and stimulant, and have a special direction to mucous membranes. The tincture is excellent in nervous diseases, spasms of the bowels, flatulency, and diarrhœa; and combined with the tincture of poke berries, is very serviceable in chronic rheumatism and syphilis. It is said to have been used with great success, in the West, in Asiatic cholera. Dose of the tincture, from ten drops to a fluid dram, in sweetened water. Dose of the oil of prickly ash berries, from two to ten drops, on sugar.

Prickly Elder (*Aralia Spinosa*). — This is a tree which grows in the Southern and Western States, and is called *southern prickly ash*, and *toothache tree*. The bark is stimulant, alterative, and diaphoretic. The fresh bark, emetic and cathartic. The tincture is serviceable in skin diseases, syphilis, and chronic rheumatism. Dr. John King reports, that in the cholera of 1849, it was found very serviceable, where cathartics were required, in the following combination: compound

powder of jalap, one dram; powdered prickly elder bark, one dram; compound powder of rhubarb, two drams. These were mixed, and given in half-teaspoonful doses, every half hour, or hour, until they operated. The bark is sialagogue, and, in small doses, powdered, is said to relieve the dry and parched condition of the throat, in many diseases.

Pumpkin Seeds. — The infusion of pumpkin seeds, made by placing them in water without bruising them, are mucilaginous and diuretic, and are used in inflammation of the stomach and bowels, scalding of the urine, strangury, etc. But this infusion is more particularly valuable for its power of expelling the tape-worm. It may be drank freely. The oil of pumpkin seeds, obtained by expression, has similar properties, and may be taken in doses of six to twelve drops, several times a day.

Quassia (*Picræna Excelsa*). — This is the wood of a tall tree growing in Surinam and some of the West India Islands. It is an intensely bitter tonic, febrifuge, and anthelmintic, possessing in the highest degree the properties of the simple bitters. It invigorates the digestive organs, without producing much excitement of the circulation. It is well adapted to dyspepsia and the debility of the stomach which succeeds acute disease, and indeed all complaints where simple bitter is required. Its generic title perpetuates the name of the negro Quassi, of Surinam, who first discovered its medicinal virtues, about the middle of the last century, and who became famous for treating malignant fevers with it, as a secret remedy.

Preparations. — Fluid extract, dose, half a dram to a dram; solid extract, dose, three to five grains; tincture, dose, four to eight drams; infusion, two drams to a pint of water, dose, two to four ounces.

Queen of the Meadow (*Eupatorium Purpureum*). — This perennial herb grows in low, swampy places, in many parts of the country. It is called *trumpet weed*, and, from its fine medicinal effects in complaints of the urinary organs, *gravel root*. It is an excellent diuretic, tonic, and stimulant. Used in gout, rheumatism, hematuria, chronic diseases of the urinary organs, strangury, gravel, and dropsical affections. The decoction is the form in which it is most used; the dose being two to four ounces, two or three times a day.

A preparation called *eupurpurin* is also extracted from it, which, in three-grain doses, is a powerful diuretic, occasioning, in some cases, it is said, an enormous flow of urine.

Queen's Root (*Stillingia Sylvatica*). — This perennial herb grows in sandy soils in the Southern States. The root is medicinal, being in large doses, emetic and cathartic; in small doses, an alterative of considerable value in skin diseases, rheumatism, syphilis, and scrofula, and in such other complaints as require alteratives.

Preparations. — Fluid extract, dose, five to fifteen drops; compound fluid extract, dose, half a dram to a dram; tincture, two ounces to a pint of diluted alcohol, dose, one to three drams; infusion, dose, one to two ounces. In chronic bronchitis, and similar complaints, the

following syrup is well recommended: fluid extract of stillingia, two ounces; fluid extract of bloodroot, two ounces; fluid extract of cherry bark, two ounces; balsam of tolu, one ounce and a half; syrup, two and a half pints. Dose, one to two drams.

Red Chickweed (*Anagallis Arvensis*). — An annual plant, common in Europe and this country. It has small scarlet flowers in June and July. It has been used in nervous diseases, as mania, delirium, epilepsy, and particularly hydrophobia. Old and ill-conditioned ulcers are improved by its use, in the form of poultice.

Red Root (*Ceanothus Americanus*). — This shrubby plant has the names of *New Jersey tea* and *wild snow-ball*, and is found in all parts of the United States. The bark is antispasmodic, sedative, astringent, and expectorant, and tastes and smells like the peach leaf. A decoction is useful in dysentery, diarrhœa, hooping-cough, and chronic bronchitis, in doses of a tablespoonful, three times a day. It makes, likewise, a very good injection in leucorrhœa and gleet, and gargle for ulcerations of the mouth and throat.

Red Clover (*Trifolium Pratense*). — The blossoms of this very common biennial plant are medicinal, and are highly recommended in deep, ragged, and cancerous ulcers, as well as in badly-conditioned burns. They are soothing and detergent, and promote healthful granulation.

Preparation. — Solid extract, to be used as an external application, chiefly in the form of ointment, made by uniting four ounces of it with half a pound of lard.

Red Rose (*Rosa Gallica*). — The petals of the rose are slightly tonic and astringent, and are considerably employed in chronic inflammations of the eye. Rose water, distilled from the petals, is used for similar purposes.

Red Saunders (*Pterocarpus Santalinus*). — This is a large tree growing in Ceylon, the wood of which imparts a red color to alcohol, ether, and alkaline solutions, but not to water. It is almost solely used for imparting color to tinctures, etc., having little or no medicinal properties.

Rosin. — This is the solid resinous matter which remains after the distillation of turpentine. It is much used as an ingredient in ointments and plasters, but is never taken internally. The vapor which arises from heating it upon some hot surface is sometimes inhaled with great advantage in chronic bronchitis, and other chronic affections of the air tubes.

Rhatany (*Krameria Triandra*). — This is a native of Peru, growing in dry, sandy places. It is a powerful astringent, and a gentle tonic. It is given with advantage in excessive menstruation, vomiting of blood, chronic diarrhœa, leucorrhœa, and inability to retain the urine; likewise, as a local application in falling of the bowel. It is valuable also for nose-bleed, and bleeding gums. Dose of the powder, for internal use, from ten to thirty grains.

Preparations. — Fluid extract, dose, half a dram to a dram; solid extract, dose, five to twenty grains; tincture, three ounces to a pint of diluted alcohol, dose, three to six drams; infusion, two ounces to a pint of water, dose, half an ounce to an ounce.

Rhubarb (*Rheum Palmatum*). — This root is derived from several species of rheum, and passes under the various names of *European*, *Russian*, *Chinese*, *East India*, and *Turkey rhubarb*. The variety called Russian, or Turkey rhubarb (for they are the same), is considered the best. Rhubarb is cathartic, astringent, and tonic. It is much used in mild cases of diarrhœa and cholera infantum; likewise, as a stomachic and gentle tonic in dyspepsia, accompanied with a debilitated state of the digestive organs. It is a valuable remedy in the complaints of children, and is deservedly much used in treating them. It acts upon the muscular coat of the bowels, producing thick rather than watery stools. It is therefore not adapted to the treatment of dropsical complaints. Its astringency may be increased by roasting it, or diminished, by combination with soap, or an alkali.

Preparations. — Fluid extract, dose, half a dram to a dram; aromatic fluid extract, dose, half a dram to a dram; fluid extract of rhubarb and senna, dose, half a dram to a dram; solid extract, dose, two to ten grains; tincture, an ounce and a half of fluid extract, and half an ounce of essence of cardamom, to a pint of diluted alcohol, dose, half an ounce to an ounce and a half; infusion, one ounce fluid extract and two ounces spirit of cinnamon to a pint of water, dose, one to three ounces; syrup, three ounces of fluid extract to fourteen of syrup, dose, two to five drams.

Rosemary (*Rosmarinus Officinalis*). — This evergreen shrub grows on the borders of the Mediterranean, and is cultivated in Europe and this country. It is stimulant, antispasmodic, and emmenagogue. It is not used, in this country, however, except to perfume ointments, tinctures, and syrups.

Round-Leaved Pyrola (*Pyrola Rotundifolia*). — This perennial shrub grows in various parts of our country, and bears white flowers in June. It is called *canker lettuce*, *pear-leaf wintergreen*, etc. Its medicinal properties are those of a tonic, astringent, antispasmodic, and diuretic. Used in decoction for epilepsy and other nervous disorders; also for gravel, and other diseases of the bladder and kidneys. The decoction may be used, too, as a wash for ulcerations of the mouth, indolent ulcers, and chronic ophthalmia. The decoction may likewise be used in making poultices for painful swellings, boils, and carbuncles. It may be taken in doses of from one to six ounces.

Rue (*Ruta Graveolens*). — Rue has the medicinal virtues of the antispasmodics, anthelmintics, and emmenagogues. In large doses, it is poisonous. It is useful in wind colic, worms, hysterics, epilepsy, etc. Dose of the leaves, from ten to twenty grains; of the infusion, from one to four ounces.

Saffron (*Crocus Sativus*). — This is a native of Greece and Asia Minor; it is also cultivated in France, England, and America, as well

as in other countries. It has been thought to be stimulant and antispasmodic, in small doses, relieving pain, and producing sleep; in large doses, giving rise to headache, and producing stupor. In the general judgment of the profession, it is now considered, however, as having very little activity. It is accordingly not much used, except in domestic practice, where it has some reputation among nurses for its power to bring out measles, and other eruptions. It is also thought to be beneficial in amenorrhœa, dysmenorrhœa, chlorosis, and hysteria. It is chiefly used at present to impart flavor and color to tinctures.

Preparations. — Fluid extract, dose, twenty to sixty drops; tincture, dose, half a dram to a dram; infusion, one dram to a pint of water, dose, two to three ounces.

Sage (*Salvia Officinalis*). — The tops and leaves of this well-known garden plant are aromatic, astringent, diaphoretic, and slightly tonic. The infusion is useful in debilitated conditions of the stomach, attended with flatulence; it frequently relieves nausea; the cold infusion checks and sometimes entirely removes the night-sweats of hectic. The infusion is useful as a gargle in inflammation of the throat, particularly, if united with a little honey and alum. Dose of the infusion, from one to three fluid ounces.

Sarsaparilla (*Smilax Officinalis*). — Grows in swamps and hedges in the Middle and Southern States. The root has long been held in esteem as an alterative, diuretic, and demulcent, being used in scrofula, chronic rheumatism, and affections of the skin; but its most extensive and useful application has been found to be in the treatment of secondary and tertiary syphilis; and especially in the broken condition of the system which follows the use of mercury in these affections.

Preparations. — Fluid extract, dose, one dram; fluid extract of sarsaparilla and dandelion, dose. one dram; solid extract, dose, five to twenty grains; infusion, dose, two to four ounces.

Sassafras (*Laurus Sassafras*). — This tree is common in the United States. The bark of the root, which is the medicinal part, is alterative, diuretic, diaphoretic, and a warm aromatic stimulant. It is mainly used to improve the flavor of other medicines, and also, as a constituent of those compounds, which are recommended in chronic rheumatism, syphiloid affections, eruptions of the skin, and scurvy.

Preparations. — Fluid extract, dose, one to two drams; tincture, six ounces to a pint of alcohol, dose, half an ounce to an ounce; infusion, two ounces to a pint of water, to be drank as desired.

Savin (*Juniperus Sabina*). — An evergreen shrub, growing in Europe and North America. The tops and leaves are diuretic, diaphoretic, emmenagogue, and anthelmintic. The warm infusion promotes menstruation, and destroys worms. Care should be taken never to administer this medicine during pregnancy, its effects being violent and dangerous.

Preparations. — Fluid extract, dose, ten to thirty drops; solid extract, dose, one to five grains: tincture, four ounces to a pint of

diluted alcohol, dose, half a dram to a dram and a half; infusion, half an ounce to a pint of water, dose, half an ounce to an ounce. The following mixture is useful in amenorrhœa: fluid extract of savin, half a dram; fluid extract of ginger, one dram; sulphate of potassa, two drams. Mix. Dose, half a dram, twice a day. The oil of savin has properties similar to those of the leaves. Dose, from two to five drops, on sugar.

Scammony (*Convolvulus Scammonia*). — This plant is a native of Syria, and the neighboring countries. The medicinal part is the hardened juice of the fresh root. It is an energetic cathartic, producing griping, and sometimes operating with decided harshness, on which account it is generally combined with other medicines which lessen the severity of its action. The dose is from five to twenty grains.

Scullcap (*Scutellaria Lateriflora*).— An indigenous plant, flowering in July and August. The whole herb is used. It is a valuable nervine, tonic, and antispasmodic; while it gives support to the nerves, therefore, it imparts both quietness and strength to the whole system, and does not, like other nervines, leave the patient excited and irritable. It finds its use in the treatment of neuralgia, chorea, convulsions, lockjaw, and most other diseases of the nervous system.

Fig. 224.

SCULLCAP.

Preparations. — Fluid extract, dose, half a dram to a dram; compound fluid extract, dose, half a dram to a dram; tincture, four ounces to a pint of diluted alcohol, dose, one to two drams; infusion, dose, a wineglassful, three times a day; scutellarin, the active principle, dose, two to six grains.

Seneka (*Polygala Senega*). — An indigenous plant, commonly called *snake-root*, the root of which is used in medicine. It is a stimulating diuretic and expectorant, and in large doses, an emetic and carthartic. It excites all the secretions. It is useful in chronic bronchitis, and in other chronic affections of the breathing tubes.

Preparations. — Fluid extract, dose, twenty to forty drops; infusion, dose, one ounce to an ounce and a half; syrup, four ounces of fluid extract to twelve ounces simple syrup, dose, half a dram to a dram. The following is a very good expectorant cough preparation: fluid extract of seneka, three drams; fluid extract of squill, half a dram; syrup of tolu, two drams; paregoric, two drams; carbonate of ammonia, twenty grains; water, four and a half ounces. Mix. Dose, one dram.

Senna (*Cassia Acutifolia*). — Grows abundantly in Upper Egypt. The leaves are the medicinal part. It is a mild, active, and certain carthartic, and is much used in combination with other medicines,

particularly epsom salts. The addition of cloves, ginger, cinnamon, and other aromatics, removes all its tendency to griping, and makes it a safe and gentle, yet active purgative, in most cases, calling for an evacuation of the bowels.

Preparations. — Fluid extract, dose, one to two drams; fluid extract of senna and jalap, dose, half a dram to a dram; solid extract, dose, three to eight grains; tincture, three ounces to thirteen ounces of diluted alcohol, dose, half an ounce to an ounce; infusion, two ounces to a pint of water, dose, half an ounce to an ounce.

Shrubby Trefoil (*Ptelea Trifoliata*). — This shrub, which grows in the West, is called *wafer-ash*, and *wingseed*. Its bark and root have tonic properties, and are used in intermittent and remittent fevers, and wherever nature needs a lift in getting up from exhausting complaints. The medicine, like other tonics, improves the appetite and digestion. Dose of the solid extract, from three to five grains, three or four times a day; of the cold infusion, a tablespoonful, every two or three hours.

The oleo-resinous principle of the crude bark is called ptelein, and is a powerful tonic. Dose one or two grains, three or four times a day.

FIG. 225.

SKUNK CABBAGE.

FIG. 226.

SLIPPERY ELM.

Skunk Cabbage (*Symplocarpus Fœtidus*). — A perennial plant, growing in moist places throughout the United States; sometimes called *meadow cabbage*. The root is stimulant, expectorant, antispasmodic, and slightly narcotic. It is given for pulmonary and bronchial affections, epilepsy, hysterics, asthma, hooping-cough, and irritable nerves.

Preparations. — Fluid extract, dose, twenty to eighty drops; tincture, three ounces to a pint of alcohol, dose, half a dram to a dram; infusion, dose, one to two ounces; syrup, two ounces of fluid extract to eight ounces of simple syrup, dose, two to three drams. For asthma and cough, and to promote expectoration, and remove tightness across the chest, the following is a very good compound prepa-

ration: one ounce each of the fluid extract of skunk cabbage, lobelia, bloodroot, pleurisy root, and ginger, one pint of water, and three pints of alcohol. Dose, two to four drams.

Slippery Elm (*Ulmus Fulva*). — The inner bark of this well-known tree is nutritive, demulcent, emollient, and slightly expectorant and diuretic. It is valuable as a demulcent drink in inflammations of the lungs, stomach, bowels, bladder, and kidneys; also, for coughs, strangury, dysentery, and the summer complaint of infants. It makes a valuable poultice for various purposes.

Small Spikenard (*Aralia Nudicaulis*). — This plant grows throughout the United States, from Canada to the Carolinas, in rocky woods. It is called *false sarsaparilla* and *wild sarsaparilla*. The root is a gentle stimulant, diaphoretic, and alterative. It is used in domestic practice, and by some physicians, in rheumatism, syphilis, and cutaneous diseases. The American spikenard, *aralia racemosa*, resembles the small spikenard in medical properties. Either of these roots is valuable in chronic affections of the lungs and air tubes.

Soap (*Sapo*). — Soap is laxative, antacid, and antilithic, and is much used in combination with cathartics, to lessen the severity of their action. In mesenteric fever, advantage is derived from rubbing the tumid belly of children with a strong lather of soap, morning and evening; and few things are more effectual in removing hardened feces from the rectum in cases of obstinate costiveness than an injection of soap-suds.

Sodium. — This is a soft white metal. United with oxygen in the proportion of one equivalent each, it forms the alkali, *soda*. The following are the principal preparations of soda used in medicine:

Bicarbonate of Soda (*Sodæ Bicarbonas*). — This is a white, inodorous powder, generally called *super carbonate of soda*. It is antacid, antilithic, and slightly diuretic. It is chiefly used in preparing what are called soda powders, and in various preparations of medicine, when an antacid is required. It is also taken simply dissolved in water, for acidity of the stomach. The *yeast powders*, now so much used, are said to be composed of about two and a half parts of cream of tartar, and one part each of corn starch and bicarbonate of soda. Housewives may as well make the combination for themselves.

Borate of Soda (*Sodæ Boras*). — This is everywhere known by the name of *borax*. It exists naturally formed in several parts of the world, and is likewise manufactured. It is a mild refrigerant and diuretic; also emmenagogue, promoting menstruation, facilitating parturition, and favoring the expulsion of the after-birth, by its specific influence upon the womb. It has considerable reputation in the treatment of urinary diseases, particularly those connected with an excess of uric acid. The dose is from twenty to forty grains in solution. Combined with rose-water, honey, and various other things, according to circumstances, borax makes a valuable wash for inflammatory affections of the mouth and throat, skin diseases, etc.

Chloride of Sodium (*Sodii Chloridum*). — This is the chemical name of *muriate of soda*, or *common salt*. In small doses, it is tonic, alterative, and anthelmintic. It checks bleeding from the lungs, when taken in teaspoonful doses. The dose as an alterative is from ten to sixty grains. As moderately used in food by most civilized people, it promotes digestion and improves the general health.

Sulphate of Soda (*Sodæ Sulphas*). — This has a very pretty name, but it will not sound half as well to thousands of young persons, when they are told that it is the well-known *glauber's salts*. From half an ounce to an ounce of it, dissolved in half a tumblerful of water, acts as a cathartic; a smaller dose, as a laxative and diuretic. Its nauseous and bitter taste may be somewhat concealed by a little cream of tartar, or lemon juice, or a few drops of sulphuric acid.

Sulphite of Soda (*Sodæ Sulphis*). — This preparation is in the form of transparent crystals, and is very soluble in water. In doses of sixty grains, this is said to have been used with success in frothy vomitings; it is also well spoken of as a remedy in acute rheumatism, and as a wash in thrush, and some diseases of the skin.

Tartrate of Potassa and Soda (*Sodæ et Potassæ Tartras*). — This is one of the mildest, and most cooling purgatives among the salts. It is known as *rochelle salt*, and generally agrees well with irritable and delicate stomachs. Dose, from two drams to an ounce, in a tumblerful of water. The gentle physic called *seidlitz powders* is composed of two drams of rochelle salt and two scruples of bicarbonate of soda in a blue paper, and thirty-five grains of tartaric acid in a white paper. The contents of each paper is dissolved in half a tumbler of water by itself; one solution is then poured into the other, and the whole is drank during the effervescence.

Solomon's Seal (*Convalaria Multiflora*). — This is one of our own perennial plants, and is found in various parts of the country. The root is tonic, mucilaginous, and astringent. It acts especially upon mucous tissues, and has therefore found its use in chronic dysentery, and piles, and in chronic inflammation of the stomach and bowels. Dose of the decoction, or infusion, from one to four fluid ounces, three or four times a day. Large doses purge and vomit. The decoction, applied locally, relieves the inflammation caused by the poison vine.

Solution of Arsenite of Potassa (*Liquor Potassæ Arsenitis*). — This is known under the names of *arsenical solution* and *Fowler's solution*. It is a transparent liquid, having the color, taste, and smell of spirits of lavender. It has the general action upon the human body of the arsenical preparations. It is the preparation generally resorted to where arsenic is given internally, and is used with considerable success in intermittent fever, leprosy, and several other skin diseases, St. Vitus's dance, periodical headache, and some other complaints. The dose is from three to ten drops, three times a day, given in water; generally, it is better not to go beyond five drops. Sometimes it disturbs the stomach, and binds the bowels, producing head-

ache, dizziness, and confusion of mind. When such effects follow its use, it must be laid aside, and a purgative given. After an interval of two weeks, it may be resumed in smaller doses. It often requires to be used for several months.

Spanish Flies (*Cantharis Vesicatoria*). — These insects are of a beautiful, shining, golden-green color. They attach themselves to such trees, in France, Spain, and Italy, as the white poplar, elder, privet, and lilach, upon the leaves of which they feed. They make their appearance in swarms upon these trees, in May and June, and are shaken off in the morning while torpid with the cold. Internally administered, they are a powerful stimulant, exercising a peculiar influence over the urinary and genital organs. In large doses, they excite violent inflammation of the alimentary canal and urinary organs, strangury, irritation of the sexual organs, headache, delirium, and convulsions; also painful priapism, vomiting, bloody stools, salivation, fetid breath, hurried breathing, and difficulty of swallowing. They are given internally for chronic gonorrhœa, leucorrhœa, seminal weakness, and paralysis of the bladder. Dose of the powder, from half a grain to two grains; of the tincture, from twenty to sixty drops. Solution of potassa, given every hour, in thirty-drop doses, is a remedy for strangury produced by cantharides. Spanish flies are used externally, in the form of blistering plaster; also in the form of tincture, mixed with various solutions, to produce irritation and redness of the skin.

Spearmint (*Mentha Viridis*). — This has carminative, diuretic, and antispasmodic virtues. The warm infusion of it is much employed in domestic practice, to produce perspiration, after taking cold, and while suffering from feverish symptoms, from various causes. The oil of spearmint has similar properties with the herb, and may be taken in five to ten drop doses, on sugar. One ounce of the oil of spearmint, dissolved in a pint of alcohol, constitutes the essence of spearmint.

Spermaceti (*Cetaceum*). — This is a white crystalline substance, obtained from the head of the spermaceti whale. In household practice, it is considerably used for the coughs and colds of children, being generally simmered with molasses or loaf sugar. It forms a part of several cerates and ointments.

Spider's Web (*Tela Araneæ*). — The web of the black or brown spider, gathered in barns, cellars, etc., is sometimes given in five or six grain doses, in pill form, and it is said with good effect, in periodical headache, hysterics, St. Vitus's dance, asthma, and fever and ague. It is likewise applied externally to check bleeding.

Spirit of Nitric Ether (*Spiritus Ætheris Nitrici*). — The general reader will know this article better under the name of *sweet spirits of nitre*. It is diuretic, diaphoretic, antispasmodic, and stimulant, and in large doses, a narcotic poison. It is much used in diseases of the urinary organs, either alone or combined with sedatives, and other

diuretics. Dose, from twenty drops to two fluid drams, to be taken in water, three or four times a day.

Sponge (*Spongia*). — When burned, this is used as an alterative in scrofula, scrofulous tumors, goitre, and obstinate diseases of the skin. It is much employed by homœopathic physicians, though it has much less remedial power than iodine. Dose, one to three drams, mixed with honey or syrup.

Spurred Rye (*Secale Cornutum*). — This is a diseased product of rye, known by the name of *ergot*. This article has a peculiar effect upon the womb, causing it to contract with great energy, when given in full doses. It should never be given, however, continuously, for a great length of time, as it has been known, when so used, to produce dry gangrene, typhus fever, and nervous disorders connected with convulsions. Such were its effects in certain provinces of France, in consequence of the use of rye bread contaminated with it. It is useful in excessive uterine hemorrhage, which it arrests by causing the womb to contract, and thus to condense its tissue, and close up its bleeding vessels. It has also been successful in bleeding from the lungs.

Preparations. — Fluid extract, dose, half a dram to a dram; tincture, four ounces to a pint of diluted alcohol, dose, two and a half to five drams; infusion, dose, one to two ounces; wine, five ounces of fluid extract to a pint of sherry wine, dose, two to four drams, in cases of labor; for other purposes, one to two drams.

Squill (*Scilla Maritima*). — A perennial plant growing in countries on the Mediterranean. In large doses, it is emetic and purgative; in small doses, expectorant and diuretic. It is used in pulmonary affections to increase expectoration, and in dropsical complaints to augment the secretions of the kidneys. Dose of the dried root, one to five grains, generally to be united with nitre or ipecac.

Preparations. — Fluid extract, dose, as an expectorant and diuretic, two to six drops; as an emetic, twelve to twenty-four drops; compound fluid extract, dose, ten to twenty drops; tincture, two ounces to a pint of diluted alcohol, dose, twenty to forty drops; syrup, dose, a quarter to half a dram.

Star Grass (*Aletris Farinosa*). — This plant is found in dry soils throughout most parts of the United States, and called *unicorn root*, *ague root*, and *crow corn*. The root is an intensely bitter tonic, and is used to improve the tone of the stomach, and for flatulent colic and hysterics. It is said also to give tone to the female generative organs, affording a protection against miscarriage. The Eclectics call it one of their best agents in chlorosis, suppressed menstruation, engorgement and falling of the womb, and painful menstruation. Dose of the powdered root, from five to ten grains, three times a day.

Preparations. — Fluid extract, dose, ten to thirty drops; tincture, two ounces to a pint of diluted alcohol, dose, half a dram to a dram; infusion, two drams to a pint of water, dose, one or two ounces;

syrup, dose, one to two drams; aletridin, the active principle, dose, one to three grains.

St. Ignatius's Bean (*Faba Sancti Ignatii*). — The seeds are the part used, and are the product of the *Ignatia Amara*, — a tree of middle size, growing in the Philippine Islands, and is a species of the *strichnos*. These seeds possess a large amount of strychnine, and consequently, in medicinal doses, are a powerful nervine tonic, and are used for improving the digestive functions, and for rousing and strengthening the whole system when prostrated by nervous complaints.

Preparations. — Fluid extract, dose, five to ten drops; solid extract, dose, half a grain to a grain and a half.

Storax (*Styrax Officinale*). — This is the hardened juice of the storax, a native of the countries along the Mediterranean. It is a stimulant and expectorant, and is used for chronic bronchitis, laryngitis, and cough. The *liquid storax* is sometimes employed instead of copaiva in gonorrhœa and gleet. The dose is from ten to twenty grains. Storax is a constituent in the compound tincture of benzoin.

FIG. 227.

STAR GRASS.

FIG. 228.

STRAMONIUM.

Stramonium (*Datura Stramonium*). — This annual plant is most known in this country by the name of *Jamestown weed;* in England by that of *thornapple*. The leaves and seeds are medicinal. Stramonium is a powerful narcotic; it is also antispasmodic, anodyne, and sedative. It is used in various nervous affections, as chorea, epilepsy, palsy, tetanus, and mania. It is much used for relieving acute pains, etc. Taken in large doses, it is a powerful poison.

Preparations. — Fluid extract, dose, five to twenty drops; solid extract, dose, half a grain to a grain; tincture, two ounces to a pint of alcohol, dose, half a dram to a dram and a half, and to be gradually increased.

Sulphur. — This is considerably used in medicine, being laxative, diaphoretic, and resolvent. It is chiefly used for piles, chronic rheumatism, gout, asthma, and those affections of the breathing organs

not attended with acute inflammation. Externally and internally, it is much employed in skin diseases, particularly the itch, for which it is a specific. In these affections, it is frequently applied in the form of sulphur baths. The dose of sulphur is from one to three drams, mixed with syrup, molasses, or milk. When sublimed, this article is called *flowers of sulphur*, which is the form in which it is chiefly used in medicine.

Sumach (*Rhus Glabrum*). — Found in almost all parts of the United States, in old neglected fields, and by the side of fences. The bark and berries are astringent, tonic, antiseptic, and diuretic, and are used in diarrhœa, dysentery, gonorrhœa, whites, hectic fever, and scrofula. The berries make a valuable gargle in quinsy, and ulcerations of the mouth and throat, and also a useful wash for ringworm, tetter, and ulcers. The excrescences which grow upon the leaves have nearly as much astringency as galls, and when pulverized and mixed with lard, have a similarly soothing effect upon piles.

Preparations. — Fluid extract, dose, one to two drams; tincture, four ounces to thirteen ounces of diluted alcohol, dose, half an ounce to an ounce.

Sunflower (*Helianthus Annuus*). — The seeds and the leaves of this plant are expectorant and diuretic, and are useful in several pulmonary affections. The seeds yield a fixed oil, in which their medicinal virtues are chiefly found. In doses of ten or twenty drops, this oil acts favorably upon inflamed mucous surfaces, and in doses three times as large, it greatly augments the flow of urine.

Swamp Dogwood (*Cornus Sericea*). — This is found in damp places, and along the banks of rivers, in various parts of our country, and is known as *red ozier*, *red willow*, and *rose willow*. The bark is tonic, stimulant, and astringent, and has been used for similar purposes with dogwood bark; well spoken of, also, for dyspepsia, diarrhœa, malignant fevers, and as an external application to foul and ill-conditioned ulcers. Dose of the powdered bark, from twenty to sixty grains; of the infusion, from two to four fluid ounces.

Swamp Milkweed (*Asclepias Incarnata*). — This is a native of the United States, and bears red flowers from June to August. It has the name of *white Indian hemp*. The root is emetic, cathartic, and diuretic, and is useful in asthma, bronchitis, rheumatism, syphilis, and worms.

Preparations. — Fluid extract, dose, twenty to forty drops; solid extract, dose, three to five grains; tincture, two ounces to a pint of diluted alcohol, dose, one and a half to three drams; infusion, dose, three to six drams; syrup, four ounces fluid extract to twelve ounces simple syrup, dose, half a dram to a dram and a half.

Sweet Fern (*Comptonia Asplenifolia*). — This shrub, growing in stony pastures in New England and Virginia, is tonic, astringent, alterative, and aromatic, and is used in diarrhœa, dysentery, cholera infantum, rheumatism, and debility after fevers. Dose of the decoction, from one to four fluid ounces, three or four times a day.

Sweet Flag (*Acorus Calamus*). — Found in damp places, in most parts of the world. The root is stimulant, tonic, and aromatic; useful in wind colic, weakened conditions of the stomach, and dyspepsia. Dose of the root, from twenty to sixty grains; of the infusion, from two to four fluid ounces.

Sweet Gum (*Liquidamber Styraciflua*). — This tree grows in the Middle and Southern States. Being wounded, it yields a yellowish-white, honey-like balsam, which hardens into a gum. This, melted with equal parts of lard or tallow, forms an ointment which is used in some parts of the country for piles, ringworm of the scalp, fever sores, and other complaints. Used internally, it has very nearly the same effects with storax.

Tag Alder (*Alnus Rubra*). — This shrub grows in swamps and other damp places, in northern United States. The bark is alterative, emetic, and astringent. It is used in scrofula, secondary syphilis, herpes, impetigo, and other skin diseases.

Preparations. — Fluid extract, dose, one to two drams; infusion, two ounces to a pint of water, dose, one to two ounces; alnuin, the active principle, dose, one to three grains.

Tansy (*Tunacetum Vulgare*). — Tansy is a perennial herb, having tonic, emmenagogue, and diaphoretic properties; the cold infusion being tonic, and useful in dyspepsia, wind in the stomach, jaundice, and worms; the warm infusion, diaphoretic and emmenagogue. Dose of the infusion, from one to four fluid ounces, two or three times a day.

Tar (*Pix Liquida*). — The medicinal qualities of tar are like those of turpentine, and it is sometimes used in old chronic coughs and bronchitis. The vapor of boiling tar was once thought to be very serviceable in bronchial diseases, when inhaled. Doubtless it is useful in some cases, but its virtues have been extolled above their merits. In the form of ointment, it has real efficacy in scald head and tetter.

Thimbleweed (*Rudbeckia Laciniata*). — The whole of this herb is balsamic, diuretic, and tonic, and in the form of decoction, used freely, is said to have been found useful in some urinary complaints, as Bright's disease, strangury, etc.

Tobacco (*Nicotiana Tabacum*). — The leaves of tobacco are acrid, narcotic, and poisonous, and are chiefly used in the form of ointment, in skin diseases, etc. Its poisonous qualities, however, render it dangerous when much used, even externally.

Trailing Arbutus (*Epigæa Repens*). — This grows in sandy woods and rocky soils, its flowers appearing in early spring, and exhaling a spicy fragrance. The leaves are diuretic and astringent, and are very useful in gravel, and most diseases of the urinary organs, being regarded in some cases superior to Uva ursi and buchu.

Preparations. — Fluid extract, dose, one to two drams; infusion, dose, two to four ounces.

Tapioca (*Janipha Manihot*). — This plant grows in the West Indies and Brazil. It is cultivated chiefly on account of the root, which is largely used as an article of food, particularly for the sick, or rather, for those recovering from sickness. The starch which it contains is separated by washing, scraping, grating, and grinding, and is in the form of hard, white, rough grains. It is prepared for use by boiling; and, in debility and low forms of disease, may have the addition of wine, nutmeg, or other aromatics.

Tulip Tree (*Liriodendron Tulipifera*). — This is a large and elegant tree growing in many parts of the country, and called *poplar* and *white poplar*. The bark of the root is aromatic, stimulant, and tonic, and in warm infusion, diaphoretic. It is used in fever and ague, chronic rheumatism, and chronic diseases of the stomach and bowels. Dose of the powdered bark, from a scruple to two drams; of the infusion, from one to two fluid ounces.

Turkey Corn (*Corydalis Formosa*). — This perennial plant is called *wild-turkey pea*, and *stagger-weed*, and grows in rich soils in the Southern and Western States. The tuber, which is the medicinal part, should only be collected while the plant is in flower. It is tonic, diuretic, and alterative. It is much valued as a remedy in syphilis and scrofula.

Preparations. — Fluid extract, dose, ten to forty drops; tincture, three ounces to a pint of diluted alcohol, dose, half a dram to two drams; corydalin, the active principle, dose, half a grain to a grain. A valuable alterative for syphilis is made by uniting eight grains of corydalin with ten grains of hydrastin, and dividing into twelve powders. Dose, one powder, three or four times a day.

Turmeric (*Curcuma Longa*. — This is a native of the East Indies and Cochin China. The root is a stimulant aromatic and tonic, somewhat like ginger, employed in debilitated states of the stomach, etc.

Preparations. — Fluid extract, dose, two or three drams; tincture, two ounces to twelve ounces of diluted alcohol, dose, one and a half to two ounces; infusion, dose, two to four ounces.

Valerian (*Valeriana Officinalis*). — This is a European plant, flowering in June or July. The root is tonic, nervine, and antispasmodic, and is much used in cases of irregular nervous action, particularly morbid nervous vigilance, or hypochondria, epilepsy, lowness of spirits, and nervous headache.

Preparations. — Fluid extract, dose, half a dram to a dram and a half; solid extract, dose three to ten grains; tincture, four ounces to a pint of diluted alcohol, dose, two to four drams; infusion, half an ounce to a pint of water, dose, two to four ounces; syrup, four ounces of fluid extract to a pint of simple syrup, dose, two to four drams.

Vervain (*Verbena Hastata*). — A perennial plant, common in the United States. The root is tonic, emetic, expectorant, and sudorific. It is used in intermittent fevers, colds, and obstructed menstruation, in the form of warm infusion. The cold infusion is a good tonic in

loss of appetite, debility, etc. Dose of the powdered root, one or two scruples; of the infusion, from two to four ounces, three or four times a day.

Vinegar (*Acetum*). — This is refrigerant, diuretic, astringent, and tonic; used in fevers and inflammatory complaints, likewise in scurvy and typhus, as an antiseptic. It has been found useful in dysentery and scarlet fever, saturated with common salt. Externally, it is applied to bruises, inflammations, sprains, and swellings. It sometimes has a good effect as a gargle in putrid sore throat, etc., and as a cooling wash in headache during fevers.

FIG. 229.

TAPIOCA.

FIG. 230.

VIRGINIA SNAKE-ROOT.

Virginia Snake-root (*Aristolochia Serpentaria*). — This is a perennial herb of the Middle and Southern States. The root is stimulant, tonic, and diaphoretic. It is used in typhoid fevers, when the system needs support, but cannot bear active stimulation. Combined with peruvian bark, it is also used in intermittent fevers. The cold infusion is employed in some forms of dyspepsia; likewise as a gargle in malignant sore throat.

FIG. 231.

WATER HOREHOUND

Preparations. — Fluid extract, dose, one quarter to half a dram; tincture, three ounces to a pint of diluted alcohol, dose, one to two drams; infusion half an ounce to a pint of water, dose, one to two ounces, in low forms of fever. The following is a good compound tincture; half an ounce each of fluid extract of snake-root, fluid extract of ipecac, fluid extract of saffron, fluid extract of ladies' slipper, together with half an ounce of camphor, and one and a half pints of diluted alcohol; dose, a dram to a dram and a half.

Water Horehound. — This article has been described under *Bugle Weed*, but the cut was forgotten. See *Bugle Weed* (Lycopus Virginicus).

Water Pepper (*Polygonum Punctatum*). — This annual plant is called *smart-weed*, and grows throughout our country, in low grounds, and along ditches and brooks. It has a pungent, biting taste, and is stimulant, diuretic, emmenagogue, antiseptic, and vesicant. It is used in coughs, colds, gravel, and womb complaints.

Preparations. — Fluid extract, dose, ten to sixty drops; solid extract, dose, two to three grains; tincture, four ounces to a pint of diluted alcohol, dose, half a dram to two drams; infusion, half an ounce to a pint of water, dose, half an ounce to an ounce.

Wahoo (*Euonymus Atropurpureus*). — A small shrub growing in woods in many parts of the United States. The bark of the root is a bitter tonic, laxative, alterative, diuretic, and expectorant, and is advantageously used in pulmonary affections, dropsy, constipation, torpidity of the liver, dyspepsia, and intermittent fevers.

Preparations. — Fluid extract, dose, one to two drams; tincture, four ounces to twelve ounces of diluted alcohol, dose, half an ounce to an ounce.

Wax. — The yellow and white wax are chiefly used as ingredients of plasters and ointments.

White Hellebore (*Veratrum Album*). — This is an European perennial plant, the root of which is a violent emetic and purgative, and in large doses is poisonous; not often used, except externally, in the form of ointment or decoction, for the cure of itch, and some other skin diseases.

White Oak (*Quercus Alba*). — The inner bark of the white oak is astringent, tonic, and antiseptic, and has been used in intermittent fever, chronic diarrhœa, chronic mucous discharges, and passive hemorrhages. As a wash applied externally, it sometimes arrests night-sweats, and as an astringent gargle and injection, its use is common for relaxed palate, spongy gums, leucorrhœa, falling of the bowel, etc.

Preparations. — Fluid extract, dose, half a dram to a dram; solid extract, dose, ten to twenty grains; tincture, two ounces to a pint of diluted alcohol, dose, half an ounce to an ounce.

White Pond Lily (*Nymphœa Odorata*). — This grows in ponds and marshes in many parts of our country. The root is demulcent, anodyne, astringent and alterative; used in dysentery, diarrhœa, gonorrhœa, whites, and scrofula. An infusion is sometimes used as a gargle in ulcers of the mouth and throat, and as an injection in leucorrhœa. Dose of the infusion, from two to four fluid ounces.

Wild Cherry (*Prunus Viginiana*). — This tree grows extensively in the American forests, flourishing where the soil is fertile and the climate temperate. The inner bark is tonic and stimulant to the digestive organs, and sedative to the nerves and the circulation. It is much used in consumption, scrofula, and dyspepsia.

Preparations. — Fluid extract, dose, two to four drams, compound fluid extract, dose, half a dram to two drams; infusion, half an ounce

to a pint of water, dose, two ounces; syrup, three ounces of fluid extract to thirteen ounces of simple syrup, dose, two drams to an ounce.

Wild Cucumber (*Momordica Elaterium*). — This, sometimes called *squirting cucumber*, is a native of the south of Europe, and is cultivated in Great Britain. It is a powerful hydragogue cathartic, and in large doses, causes nausea and vomiting. On account of the watery stools it produces, it is much used in dropsical complaints, though the severity of its action forbids its being used alone. Dose, a quarter to half a grain, repeated every hour till it operates; of elaterin, from a sixteenth to a twentieth of a grain, given in solution.

Wild Ginger (*Asarum Canadense*). — This is known by the names of *colt's-foot* and *Canada snake-root*, and is common in all parts of the country. The root is tonic, stimulant, aromatic, expectorant, and diaphoretic. It is used in pains of the stomach, colic, etc. Dose of the powder, half a dram; of the tincture, half a dram to two drams.

FIG. 232.

WILD INDIGO.

FIG. 233.

WITCH HAZEL.

Wild Indigo (*Baptisia Tinctoria*). — This perennial shrub is found in most parts of the country. The bark of the root is purgative, emetic, stimulant, astringent, and antiseptic. It is chiefly used for its antiseptic properties. For external use it is valuable as a wash or gargle for various ulcers, mercurial sore mouth, and scrofulous and syphilitic ophthalmia.

Preparations. — Fluid extract, dose, a quarter to half a dram; tincture, two ounces to a pint of diluted alcohol, dose, two to four drams; infusion, dose, half an ounce; baptisin, the active principle, a quarter to half a grain; gargle, four ounces of fluid extract to twelve ounces of water, to be used as occasion requires

Wild Yam (*Dioscorea Villosa*). — A perennial vine, found mostly at the South. The root is antispasmodic, and is successfully used in bilous colic. It is said to bring relief in the most violent cases of this complaint. It allays nausea and spasms during pregnancy. It is given in the form of decoction, two or three fluid ounces every thirty

or forty minutes. Dose of the tincture, from a quarter of a dram to a dram; of dioscorein, the active principle, one to four grains.

Willow (*Silex Alba*). — The willow is common in Europe and America. Its bark is tonic and astringent; and is used, occasionally, as a substitute for peruvian bark, in intermittent fever. It is also employed in the treatment of chronic diarrhœa and dysentery. Dose of the powdered bark, one dram; of the decoction, one to two fluid ounces. Salicin, the active principle, is given, sometimes, in place of quinine; dose, from two to ten grains.

Wintergreen (*Gaultheria Procumbens*). — This evergreen grows in mountainous, barren regions, throughout our country. The leaves are an agreeable stimulant, aromatic, and astringent. Used for chronic diarrhœa, and as an emmenagogue. The oil and essence are useful in flatulent colic; dose of the oil, from five to ten drops, on sugar; of the essence, thirty to forty drops. Much used to flavor other medicines.

Witch Hazel (*Hamamelis Virginica*). — This derives its name from its having fruit and flowers together on the same tree. It is found in most parts of our country. The bark and leaves are tonic, astringent, and sedative. It is used in bleeding from the lungs and stomach, and in diarrhœa, dysentery, and excessive mucous discharges. It is also used in incipient consumption, and for sore mouth, etc.

Preparations. — Fluid extract, dose, one to two drams; infusion, dose, four drams; syrup, four ounces of fluid extract to twelve ounces of simple syrup, dose, one to two drams.

FIG. 234.

WOLFSBANE.

FIG. 235.

WORMWOOD.

Wolfsbane (*Aconitum Napellus*). — This has already been described, under its other common name, which is *Monkshood;* but as the cut we had prepared to accompany it was omitted, we give it a place here, referring the reader to monkshood for its description.

Wormseed (*Chenopodium Anthelminticum*). — This perennial is called *Jerusalem oak*, and is found in waste places all over the United States. An oil is extracted from the seeds, which, in doses of from four to eight drops, morning and evening, for a child, destroys worms. A strong infusion of the tops has a similar effect. The remedy should be used four or five days, and be followed by a purge.

Wormwood (*Artemisia Absinthium*). — The tops and leaves of this perennial are tonic and anthelmintic; used in intermittent fever, jaundice, and worms. It restores the appetite in a weakened state of the digestive organs, and is also useful in amenorrhœa. It is excellent applied as a tincture, or in the form of fomentation, to bruises, sprains, and local inflammations.

Preparations. — Fluid extract, dose, one third to two thirds of a dram; solid extract, dose, three to five grains; tincture, two ounces to fourteen ounces of diluted alcohol, dose, two to four drams; syrup, two ounces fluid extract to six ounces of simple syrup, dose, one to two drams.

Yarrow (*Achillea Millefolium*). — A perennial herb, common to the Old World and New, and growing in old fields and along fences. It is tonic, astringent, and alterative, and has been used in intermittent fever, bleeding from the lungs, excessive menstruation, wind colic, and chronic dysentery. Dose of the infusion, a wineglassful, three or four times a day.

Yeast (*Cerevisiæ Fermentum*). — Yeast is slightly tonic and stimulating, and has been used with advantage in typhoid fever; also in scarlet fever, and in all diseases where there is a disposition to putridity. The dose is from one to two fluid ounces, every two or three hours. It makes an excellent antiseptic poultice, for unhealthy and fetid ulcers, especially if combined with powdered slippery elm bark, and charcoal.

Yellow Dock (*Rumex Crispus*). — The root of this perenniel plant is alterative, tonic, diuretic, and detergent, and is regarded as very valuable in the treatment of scrofula syphilis, leprosy, scurvy, and other skin diseases.

FIG. 236.

YELLOW DOCK.

Preparations. — Fluid extract, dose, one to two drams; solid extract, dose, four to eight grains; syrup, four ounces of fluid extract to twelve ounces of simple syrup, dose, half an ounce to an ounce; rumin, the active principle, dose, two to four grains.

Yellow Jessamine (*Gelseminum Sempervirens*). — This abounds in the Southern States, where it is cultivated as an ornamental vine. The root is a powerful febrifuge, narcotic, and relaxant, controlling and subduing fever, quieting nervous irritability and excitement, equalizing the circulation, promoting perspiration, and rectifying the secretions. It is much used by the Eclectics of the Western States, but the general

judgment of the profession is, that it is too powerful a remedy to be safe. My own opinion is, that the American hellebore is equally effective with the yellow jessamine, and that its general use involves far less danger.

Preparations. — Fluid extract, dose, two to twenty drops; tincture, four ounces to a pint of alcohol, dose, fifteen to sixty drops, and increase; gelseminin, the active principle, dose, half a grain to a grain and a half.

Yellow Ladies' Slipper (*Cypripedium Pubescens*). — This perennial plant is called *American valerian*, *nerve root*, etc. The fibrous roots are tonic, nervine, antispasmodic, and diaphoretic, and are used in nervous headache, nervous excitability, hysterics, neuralgia, and St. Vitus's dance. Dose of the powder, from ten to thirty grains.

Preparations. — Fluid extract, dose, half a dram to a dram; solid extract, dose, five to fifteen grains; tincture, two ounces to a pint of diluted alcohol, dose, half an ounce to an ounce; syrup, four ounces of fluid extract to fourteen ounces of simple syrup, dose, two to four drams; cypripedin, the active principle, dose, two to four grains.

Yellow Parilla (*Menispermum Canadense*). — This is a perennial plant, growing in woods, and near streams, throughout the country. The root has the properties of a tonic, laxative, alterative, and diuretic. It is valued in the treatment of scrofula, syphilis, skin diseases, gout, rheumatism, dyspepsia, general debility, and chronic inflammation of the stomach and bowels. Dose of the decoction, from two to four fluid ounces, three times a day; of the solid extract, from two to four grains.

Zinc. — Several preparations of this metal are used in medicine, as follows:

Acetate of Zinc. — This is used as an external remedy only, generally as an astringent wash for inflammations of the eye, and as an injection in gonorrhœa, but only after the acute stage of these diseases has past. The strength of these solutions generally should be one or two grains to a fluid ounce of soft water.

Chloride of Zinc (*Zinci Chloridum*). — This is a powerful escharotic, and is employed as an external application to cancers and obstinate ulcers. A weak solution of it is occasionally employed in old chronic gleet, also in whites, and purulent discharge from the neck of the womb.

Iodide of Zinc (*Zinci Iodidum*). — This is in the form of white needles, and is tonic and astringent. It is not much used, except externally, being applied in a solution of twenty grains to a fluid ounce of water, to enlarged tonsils, by means of a camel's-hair pencil, or a piece of sponge tied to the end of a stick.

Oxide of Zinc (*Zinci Oxidum*). — This is an inodorous, white powder, insoluble in water and alcohol. It is tonic and antispasmodic, and is given in chorea, epilepsy, hooping-cough, and other similar

diseases; but it is more especially employed to arrest the night-sweats of consumption, for which purpose, we have at present no other article of equal efficacy. It is sprinkled externally upon excoriated surfaces, and is used in ointments. Dose from two to eight grains, in the form of pill.

Precipitated Carbonate of Zinc (*Zinci Carbonas Præcipitatas*). — This is employed for the same purpose as prepared calamine, being adapted only to external use.

Prepared Calamine (*Calamina Præparata*). — This is in the form of a pinkish or flesh-colored powder, of an earthy appearance. It is employed only as an external application, being dusted on excoriations and superficial ulcerations, as a mild astringent. It should be a very fine powder.

Sulphate of Zinc (*Zinci Sulphas*). — This is a colorless, transparent salt, crystallizing usually in small, four-sided prisms. It is tonic and astringent, and in large doses, a prompt emetic. Used as a tonic in cases of debility attended with irritation. In obstinate intermittents, it is sometimes conjoined with sulphate of quinia; it is chiefly employed, however, in such spasmodic diseases as epilepsy, chorea, and hooping-cough. As an astringent, it is used externally, being applied in solution to bleeding surfaces, as a wash in ophthalmia, and as an injection in whites and chronic gonorrhœa.

Valerianate of Zinc (*Zinci Valerianas*). — This is in white, pearly scales, with a faint odor of valerianic acid. It is tonic and antispasmodic, and is used in the various nervous affections which accompany chlorosis. Dose, one or two grains, several times a day, in the form of pill.

Preparations. Pharmacy.

The preparation of medicines for use, constitutes the art of pharmacy. It is the peculiar business of the apothecary. It will not be necessary in these pages to describe his art, in all particulars, but merely as many of the preparations which it is his duty to prepare as are really needed in the treatment of disease. In doing this, I shall classify the preparations alphabetically, and begin with

Cerates.

These substances have a degree of hardness midway between ointments and plasters. They may be spread upon leather or linen, without the use of heat, and they do not melt and run when applied to the skin. They are made of wax, or spermaceti, combined with lard or oil. The articles are melted together by a very gentle heat, and during the process of cooling, the whole should be well stirred.

Calamine Cerate. — Prepared calamine and yellow wax, each three ounces; lard, one pound. Melt the lard and wax together. When the mixture begins to thicken, on cooling, gradually stir in the calamine.

This is called *Turner's cerate*, and is useful for burns, excoriations, superficial ulcers, and sores.

Goulard's Cerate. — Take of solution of subacetate of lead, two fluid ounces and a half; white wax, four ounces; olive oil, nine fluid ounces; camphor, half a dram. Mix the wax, previously melted, with eight fluid ounces of the oil; remove from the fire, and when the mixture begins to thicken, gradually pour in the solution of subacetate of lead, stirring constantly, with a wooden spatula, till it becomes cool. Then add the camphor, dissolved in the remainder of the oil.

This is the *cerate of subacetate of lead*, and is used for excoriations, inflamed burns, scalds, and chilblains, and for eruptions of the skin. Excellent for blistered surfaces, indisposed to heal.

Half an ounce of this preparation united with half an ounce of simple cerate, and one dram each of calomel and powdered opium, makes a very valuable remedy for various eruptions of the skin, of a local nature.

Resin Cerate. — Take of resin, five ounces; lard, eight ounces; yellow wax, two ounces. Melt together with a gentle heat, and stir till cool.

This is known as *basilicon ointment*, and is used as a gentle stimulant to blistered surfaces, indolent ulcers, burns, scalds, and chilblains.

Compound Resin Cerate — Take of resin, suet, and yellow wax, each a pound; turpentine, half a pound; flax-seed oil, half a pint. Melt together, strain through linen, and stir till cool.

This, under the name of *Deshler's salve*, is popularly used for similar purposes with the resin cerate.

Savine Cerate. — Take powdered savine, two ounces; resin cerate, a pound. Mix the savine with the cerate, previously softened.

Used as a dressing for perpetual blisters.

Simple Cerate. — Lard, eight ounces; white wax, four ounces. Melt together, and stir till cool.

Used for dressing blisters, wounds, etc., where it is desirable simply to preserve the moisture of the part, and to exclude the air.

Spanish Flies Cerate, known as *blistering plaster*. Take finely powdered Spanish flies, a pound; yellow wax and resin, each seven ounces; lard, ten ounces. To the wax, resin, and lard, previously melted together and strained, add the Spanish flies, and, by means of the most gentle heat, keep the mixture in a fluid state for half an hour, stirring occasionally, then remove the heat, and stir till cool.

This can be easily spread without the aid of heat, and is used for the purpose of drawing blisters. It is now, however, superceded in a great degree by various preparations, composed for the most part of *cantharidin*, either dissolved in oil, and applied to the skin by means of a piece of paper saturated with it, or incorporated with wax, and spread in a very thin layer upon fine waxed cloth, silk, or paper, constituting the blistering cloth, blistering paper, etc.

Confections, Conserves, and Electuaries.

THESE are soft solids, in which medicinal articles are incorporated with sugar, syrup, honey, or some other saccharine matter, for the purpose both of preserving the mass, and of rendering the medicine more palatable and convenient for use.

Aromatic Confection. — Take of aromatic powder, five and a half ounces; powdered saffron, half an ounce; syrup of orange peel, six ounces; clarified honey, two ounces. Rub the aromatic powder with the saffron; then add the syrup and honey, and beat the whole together, in a mortar, till they are thoroughly mixed.

Given in debilitated states of the stomach, as a vehicle for other medicines. Dose, from ten grains to a dram.

Compound Confection of Catechu. — Take of compound powder of catechu, five ounces; simple syrup, five fluid ounces. Add the syrup gradually to the powder, and mix them well.

To be given in diarrhœa and chronic dysentery, in the dose of half a dram to a dram.

Confection of Senna, otherwise called *lenitive electuary*. Take of senna, eight ounces; coriander seeds, four ounces; bruised liquorice root, three ounces; figs, a pound; pulp of prunes, pulp of tamarinds, pulp of purging cassia, each, half a pound; refined sugar, two pounds and a half; water, four pints. Rub the senna and coriander together and separate ten ounces of the powder with a sieve. Boil the residue with the liquorice root and figs, in the water, to one half; then press out the liquor, and strain. Evaporate the strained liquor, by the most gentle heat, to a pint and a half; then add the sugar and form a syrup. Lastly, rub the pulps with the syrup, added gradually, and, having thrown in the sifted powder, beat all together till well mixed.

This is a pleasant and admirable laxative, being well adapted to the habitual costiveness of pregnant women, and those affected with piles; for this latter purpose, it is still better combined with cream of tartar and sulphur, as described in No. 6 of the prescriptions, at the end of the book.

Decoctions.

THESE are solutions of vegetable medicines, obtained by boiling them in water. They differ from infusions, in being subjected to a greater degree of heat, the water during their preparation being kept up to the boiling point. The process should be conducted in a covered vessel, and the boiling must not be continued for a very long time. Medicines, whose active principle is volatile, are not proper for decoctions, the active principle being driven off by heat and lost.

The usual proportion of vegetable substances used in making decoctions is one ounce to a pint of water, and the dose of the decoction, from one to four ounces.

Essences.

These are generally prepared by dissolving one ounce of the essential oils of plants in one pint of alcohol. The oils of lemon, peppermint, sassafras, etc., are made in this way, and their properties, of course, are similar to the oils from which they are prepared. They are generally taken in a little sweetened water, in doses of ten drops to a teaspoonful.

Extracts.

These are soft solids, obtained by evaporating the tinctures, or solutions, of vegetable substances. The active principles of dried vegetables can only be extracted by some liquid; this, for preparing extracts, is either water, or alcohol, or a mixture of the two. Those obtained by the use of water are called *aqueous*, or *watery extracts;* those by means of alcohol, *alcoholic extracts;* and those by both alcohol and water, *hydro-alcoholic extracts.*

Extracts are generally prepared on a large scale, by persons who make a business of it. Like other articles, many of these preparations get into the market which are inferior in quality, and even worthless. Without disparaging the preparations of other manufacturers, I would mention those prepared by the large manufacturing house of Tilden & Co., at New Lebanon, New York, as worthy of public confidence. Most of their solid extracts, with the proper doses, are mentioned in previous pages, under the several articles from which they are made.

Fluid Extracts.

These are concentrations, into a small bulk, in liquid form, of the active principles of medicinal substances. They are a valuable class of remedies, being in some cases preferable to tinctures, having less alcohol; and better than extracts or decoctions, because not so often injured by heat in their preparation, and not requiring to be taken in large doses. Great skill is required in their preparation, and they should always be obtained from those who have the reputation of making reliable articles. None that I am acquainted with, better deserve confidence than those of Tilden & Co.

Fomentations.

Fomentation is a sort of partial or local hot bath, and consists either in the application of cloths dipped in hot water, or some hot medicated decoction, and applied to the affected part, or, of bitter or anodyne herbs steeped in vinegar or water, and then, while hot, enclosed in a muslin bag, and laid upon the diseased place. In either case, whether the cloths wet in a decoction of the herbs, or the herbs themselves, slightly steeped, be applied in a bag, the application should

be as hot as can be borne, and not so moist as to wet the bed or clothes of the patient.

Fomentations act by their warmth and moisture chiefly; and slightly, in some cases, by their medicinal virtues. Their object is to lessen pain and inflammation, by relaxing the parts, and relieving tension and spasm. They may be prepared from equal parts of hops, tansy, and wormwood, or from equal parts of hops, lobelia, and stramonium, etc., etc.

Infusions.

For a description of simple infusions, see page 588. Those made of one article only are sufficiently referred to in previous pages. It will only be necessary here to insert such compound infusions as are deemed important.

Compound Infusion of Catechu. — Take of powdered catechu, half an ounce, bruised cinnamon, a dram; boiling water, a pint; macerate for an hour in a covered vessel, and strain. An elegant mode of administering catechu. Dose, from one to three fluid ounces, three or four times a day.

Compound Infusion of Gentian. — Take of bruised gentian, half an ounce; dried orange peel and coriander seeds, bruised, each a dram; diluted alcohol, four fluid ounces; cold water, twelve fluid ounces. First, pour on the diluted alcohol, then, three hours afterward, the water. Let the whole stand twelve hours, and strain. An excellent form for using gentian. Dose, one fluid ounce, three or four times a day.

Compound Infusion of Geranium. — Take of geranium root, sweet bugle leaves, golden seal root, witch-hazel bark, each, in coarse powder, one ounce; boiling water, four pints. Mix, and allow all to stand in a covered vessel, two hours, applying a gentle heat; then strain. Two drams of alum may or may not be added.

Used in chronic diarrhœa and dysentery, in one or two tablespoonful doses, every two or three hours; also as an injection in gleet, whites, falling of the bowel, etc.; and as a gargle in ulcerations of the mouth and throat.

Compound Infusion of Parsley. — Take of parsley roots and seeds, and subcarbonate of iron, each, two ounces; horseradish root, one ounce; squill, juniper berries, white mustard seed, mandrake root, and queen of the meadow root, each, half an ounce; coarsely bruise these articles, and place them in boiling cider, and expose them, for twenty-four hours, to a very gentle heat, in a covered earthen vessel. The cider should be sparkling and tart. Let the articles stand in the cider.

Useful in dropsy. Dose, one or two fluid ounces, three or four times a day.

Compound Infusion of Senna. — Take of senna and manna, each, one ounce; jalap, cream of tartar, and caraway seeds, bruised, each,

two drams; boiling water, one pint. Add all the ingredients to the water, in a covered vessel, and let them stand twelve hours. Then add four ounces of elixir salutis.

This is a valuable, and not disagreeable, gentle physic for various purposes. Dose, from one to four ounces.

Compound Infusion of Trailing Arbutus. — Take of queen of the meadow root, dwarf elder bark, marshmallow root, and trailing arbutus, each, coarsely bruised, half an ounce; add to them, one pint of boiling water, and one pint of Holland gin, and steep by the fire four hours, in a closely covered vessel. Strain, and sweeten with honey.

Excellent for gravel, suppression of urine, scalding of urine, and various other disorders of the urinary organs. Dose, from an ounce to a wineglassful, with more or less frequency, according to the urgency of the case.

Injections. — *Clysters.*

These are preparations to be introduced into the lower bowel by means of a syringe. A sufficient number of them are given among the recipes at the end of the book. It is not necessary to repeat them here.

Liniments.

These are liquid preparations, generally a little thicker than water, and thinner than oils, intended only to be applied to inflamed, painful, or swelled parts. They are designed to soothe, or quiet, or stimulate, or make red the part to which they are applied; and are rubbed on with the hand, or a piece of flannel or cotton, and frequently in connection with heat, by sitting or standing before a fire.

A large number of liniments are given under the head of recipes at the end of the book. To those, I add a few valuable ones here.

Camphor Liniment. — Take six drams of camphor, and dissolve it in one fluid ounce of chloroform, and add to this one fluid ounce of olive oil.

For sprains, neuralgia, rheumatism, etc.

Compound Camphor Liniment. — Take two ounces and a half of camphor, a fluid dram of oil of lavender, seventeen fluid ounces of alcohol, and three fluid ounces of strong solution of ammonia. Dissolve the camphor and the oil in the alcohol; then add the ammonia, and shake till they are mixed.

To be used as a rubefacient and anodyne for local pains, particularly rheumatism.

Compound Liniment of Ammonia. — Take five fluid ounces of strong water of ammonia, two fluid ounces of tincture of camphor, and one fluid ounce of spirit of rosemary. Mix them well together.

This is similar to *Dr. Granville's counter-irritant lotion;* and is used as a prompt and powerful rubefacient, or even vesicatory, in neuralgia, rheumatism, gout, spasms, and inflammations.

Croton Oil Liniment. — Take one fluid ounce of croton oil, and seven fluid ounces of oil of turpentine. Mix, and shake them well together.

A good rubefacient and pustulating preparation to apply to the chest and other parts.

Liniment of Opium. — Take six ounces of castile soap, an ounce and a half of opium, three ounces of camphor, six fluid drams of oil of rosemary, and two pints of alcohol. Macerate the soap and opium in the spirit for three days; then filter, and add the oil and camphor, and shake briskly.

This is a useful anodyne and rubefacient liniment for bruises, sprains and pains of a rheumatic and gouty nature.

Liniment of Spanish Flies. — Take an ounce of powdered Spanish flies, and half a pint of oil of turpentine. Mix, and apply gentle heat to them, in a covered vessel, for three hours. Then strain.

Employed with advantage, externally, in the sinking stage of typhoid fevers. If so powerful as to be in danger of causing blistering, it may be weakened by adding flax-seed or olive oil.

Liniment of Turpentine. — Take half a pint of oil of turpentine, and, a pound of resin cerate. Melt the cerate, and add the oil to it, mixing them well.

This is a valuable remedy for scalds and burns, and should be applied soon after the accident, and be discontinued when the inflammation excited by the fire is removed. The burned or scalded surface should be covered with lint wet with the liniment.

Opodeldoc. — Take three ounces of white bar soap, sliced, an ounce of camphor, a fluid dram each of oil of rosemary and oil of origanum, and a pint of alcohol. Digest the soap in the alcohol by means of a gentle heat, until it is dissolved; then add the camphor and oils, and when they are dissolved, pour the whole into broad-mouthed vials.

This is the *camphorated soap liniment*, and is used as an anodyne application to sprains, bruises, and painful tumors, etc.

Medicated Waters.

Those preparations consisting of water impregnated with some medicinal substance are called medicated waters. They are prepared from volatile oils by triturating in a mortar a dram of the oil, more or less, with a small quantity of carbonate of magnesia, and then very gradually pouring on one quart of water, while the trituration is continued. At last, the preparation is filtered through paper. The quantity of oil, magnesia, and water, used for each preparation, is as follows:

Oil of bitter almonds, sixteen minims; carbonate of magnesia, a dram; water, one quart.

Oil of cinnamon, half a fluid dram; carbonate of magnesia, a dram; water, one quart.

Twenty minims of oil of roses, a dram of carbonate of magnesia, and one quart of water.

Oil of fennel, half a fluid dram; carbonate of magnesia, a dram; water, a quart.

Peppermint Water, Spearmint Water, and Pennyroyal Water, are all prepared from the same quantities of their several oils, as Cinnamon Water.

The dose of these waters is half a fluid ounce to two fluid ounces, except the bitter almond water, which is one or two fluid drams.

Camphor Water. — Take two drams of camphor, forty minims of alcohol, four drams of carbonate of magnesia, and one quart of water. Rub the camphor first with the alcohol, afterwards with the carbonate of magnesia, and lastly, with the water, gradually added. Then filter through paper.

Medicated Wines.

Wines are used in making certain preparations, because the alcohol they contain will extract from plants, etc., some medicinal properties which water will not, and at the same time is less stimulating than the tinctures, etc., made from alcoholic spirits.

Compound Wine of Comfrey (*Restorative Wine Bitters*). — Take one ounce, each, bruised, of comfrey, Solomon's seal, and spikenard; and half an ounce, each, bruised, of chamomile flowers, colombo, and gentian. Cover these with boiling water, and let them stand twenty-four hours, in a covered vessel. Then add two quarts of sherry wine. Macerate fourteen days, express and strain.

Valuable in leucorrhœa and other female complaints. Dose, from half a fluid ounce to two fluid ounces, three or four times a day.

Compound Wine of Golden Seal. — Take one dram, each, bruised, of golden seal root, tulip tree bark, and bitter root, half a dram of pulverized cayenne, and two quarts of sherry wine. Macerate for fourteen days, with occasional shaking; then express and strain.

This is a pleasant bitter tonic in dyspepsia, etc. Dose, from half a fluid ounce to two fluid ounces, three times a day.

Wine of Ipecacuanha. — Take two ounces of bruised ipecac, and one quart of sherry wine. Macerate fourteen days, with occasional shaking. Then express and filter through paper.

This is a valuable emetic preparation, — especially for children. Dose, as an emetic, for an adult, one fluid ounce; as an expectorant, from ten to thirty minims; for a child two years old, as an emetic, one fluid dram, repeated every fifteen minutes till it operates.

Mixtures.

These are preparations in which medicinal substances which cannot be dissolved in water are suspended in it by means of some viscid matter, like sugar, or gum arabic. Their object is to conceal the taste, prevent the sickening effect, and make it more easy to take disagreeable medicines. To make a perfect mixture requires skill. Generally, the medicine to be suspended should be triturated in a mortar with the sugar, gum arabic, etc., before the water is added.

Almond Mixture. — Take half an ounce of sweet almonds, half a dram of powdered gum arabic, two drams of sugar, and eight fluid ounces of water. Soak the almonds in the water, and having removed their external coat, beat them with the gum arabic and sugar in a mortar, till they are thoroughly mixed; then rub the mixture, gradually adding the water, and lastly, strain.

This is an agreeable, nutritive demulcent, in bronchial, dysenteric, and urinary affections. It must be used freely, the dose being from two to eight fluid ounces.

Chalk Mixture. — Take half an ounce of prepared chalk, two drams each of refined sugar and powdered gum arabic, and four fluid ounces each of cinnamon-water and water. Rub them together till they are thoroughly mixed.

This is much used in looseness of the bowels, accompanied with acidity, particularly among children. If an increase of its astringency be required, add laudanum, or kino, or catechu.

Compound Mixture of Iron. — Take a dram of myrrh, twenty-five grains of carbonate of potassa, one scruple of powdered sulphate of iron, half a fluid ounce of spirit of lavender, one dram of refined sugar, and seven and a half fluid ounces of rose water. Rub the myrrh in a mortar, gradually adding the rose water, then mix with these the spirit of lavender, sugar, and carbonate of potassa, and lastly, the sulphate of iron. Pour the whole into a glass bottle, and keep it well stopped.

This is about the same thing as *Griffith's myrrh mixture*, and is considerably used in chlorosis, and other affections requiring the use of iron.

Brandy Mixture. — Take four fluid ounces each of brandy and cinnamon water, the yolks of two eggs, half an ounce of refined sugar, and three drops of oil of cinnamon. Mix them.

A useful stimulant and nutritive draught, to be used in the sinking stage of low forms of fever.

Extract of Rhubarb and Potassa (*Neutralizing Extract*). — Take two pounds of the best rhubarb, one pound each of cinnamon and golden seal. Grind or coarsely bruise the articles, and mix them; macerate them for two days in one gallon of the best fourth proof brandy. Then express the tincture with strong pressure, and add to

it one fluid dram of oil of peppermint, previously dissolved in a little alcohol. Break up the compressed residue from the press, and place it in a perculator, and gradually run warm water through it, until the strength is exhausted. Evaporate this solution to four pints, and while the liquor is still hot, dissolve in it two pounds of bicarbonate of potassa, and three pounds of refined sugar. Continue the evaporation, if necessary, until, when added to the tincture first obtained, it will make a gallon and a half, then mix the two solutions together.

This is a useful preparation for diarrhœa, dysentery, cholera morbus, summer complaints of children, acidity of the stomach, heartburn, etc. Dose, one fluid dram.

Mettauer's Aperient. — Take one ounce and a half of pulverized aloes, four ounces of bicarbonate of soda, two fluid ounces of compound spirits of lavender, and two quarts of water. Place the whole in a jar, or jug, and let them stand fourteen days, shaking well once a day. Then pour off from the dregs. It improves by age.

This preparation was made by Professor Mettauer, and was held in so high esteem by him, that when he sent it to the London Lancet, he requested that he might have the credit of compounding it. It is one of the best known aperients for costiveness, — particularly when connected with bilious dyspepsia. For that class of bilious persons who overeat, and have acid stomachs, it has great value. In bilious cases, the nitro-muriatic acid, taken before meals (the aperient *after* meals) may be usefully associated with it. In the constipation of hysteria and hypochondriasis, the fluid extract of valerian may be added to it. Dose, from two drams to two ounces.

Saline Mixture (*White Liquid Physic*). — Take half a pound of sulphate of soda, and one and a half pints of water. Mix, and dissolve the soda; then add two fluid ounces of nitro-muriatic acid, and one dram and eight grains of powdered alum.

Used to allay nausea and vomiting, and as a cooling purgative; also for colic, diseases of the liver, diarrhœa, dysentery, intermittent fevers, etc.

This is one of the remedies of the Eclectic school of physicians, and is held by them in high esteem. Dose, a tablespoonful in a gill of water, to be repeated every hour or two, until it causes one or two evacuations from the bowels.

Ointments.

Ointments are composed of fatty substances, about the consistence of butter, impregnated with medicine. All gritty matter should be excluded from them. To prevent the rancidity to which they are liable, a little glycerin is now frequently added.

Ointment of Acetate of Lead. — Take two ounces of white wax, and four ounces of lard; melt them together, and add two and a half drams of finely powdered acetate of lead; stir constantly till cold. This is useful for burns scalds, ulcers, and excoriations.

Ointment of Bayberry. — Take half a pound each of tallow, white turpentine, and bayberry, and four ounces of olive oil; melt together and strain.

Good for scrofulous and indolent ulcers.

Ointment of Belladonna. — Take a dram of extract of belladonna and an ounce of lard; mix them.

A useful anodyne application for painful tumors, neuralgia, etc.

Ointment of Creosote. — Take half a fluid dram of creosote, and an ounce of lard; mix them.

A useful application for syphilitic, scrofulous, and cancerous ulcers.

Compound Ointment of Galls. — Take six drams of finely powdered galls, six ounces of lard, and a dram and a half of pulverized opium; rub them together.

A valuable preparation in irritable piles.

Ointment of Red Iodide of Mercury. — Take one dram of red iodide of mercury, and seven drams of ointment of white wax: incorporate them thoroughly together by trituration in a mortar.

Used as a dressing for indolent scrofulous ulcers.

Ointment of Nitrate of Mercury. — Take one ounce of mercury, eleven fluid ounces of nitric acid, nine fluid ounces of fresh neats-foot oil, three ounces of lard. Dissolve the mercury in the acid, then heat the oil and lard together in an earthen vessel to 200° F.; then add the mercurial solution, and stir with a wooden spatula, constantly, as long as effervescence continues, and afterward occasionally till the ointment stiffens.

Milder Ointment of Nitrate of Mercury. — Take an ounce of ointment of nitrate of mercury, and seven ounces of lard; rub them together.

The first of the above two preparations is the *citrine ointment*, and is much and advantageously employed as an external application in porrigo, impetigo, psoriasis, and pityriasis. It is nearly a specific for inflammation of the eyelids connected with the formation of scaly matter about the lashes. The second of these two preparations is merely a dilution of the first.

Ointment of Oxide of Zinc. — Take half an ounce of oxide of zinc, and three ounces of lard; rub them together.

This is a mild astringent application in chronic opthalmia, eruptions of the skin, sore nipples, and other excoriations.

Ointment of Poison Hemlock. — Take one dram of extract of poison hemlock (Tilden & Co.'s preparation), and one ounce of lard; rub them together.

An anodyne application for painful swellings, ulcers, and piles.

Ointment of Poke. — Take a dram of the extract of poke, and one ounce of lard; mix them.

For malignant ulcers, scald head, itch, etc.

Ointment of Stramonium. — Take one dram of the extract of stramonium leaves, and one ounce of lard; rub the extract with a little water till it is uniformly soft, and then with the lard.

Used as an external application in irritable ulcers, painful piles, and skin eruptions.

Simple Ointment. — Take a pound of white wax, and four pounds of lard; melt them together with a gentle heat, and stir constantly till cold.

Ointment of Rose Water. — Take a fluid ounce of rose water, two fluid ounces of oil of almonds, half an ounce of spermaceti, one dram of white wax; melt together, by means of a water-bath, the oil, spermaceti, and wax; then add the rose water, and stir the mixture constantly till cold.

This is the well known preparation called *cold cream*, and is used with much advantage for chapped lips and hands, excoriations, etc.

Spermaceti Ointment. — Take five ounces of spermaceti, fourteen of white wax, and a pint of olive oil; melt them together over a slow fire, and stir constantly till cold.

A mild dressing for blisters, wounds, and excoriated surfaces.

Tar Ointment. — Take a pound each of tar and suet; melt the suet with a gentle heat, and add the tar to it; then stir constantly till they are cold.

A useful stimulating application to various scaly and scabby eruptions, particularly leprosy and scald head.

Ointment of White Hellebore. — Take one ounce of powdered white hellebore root, four ounces of lard, and twelve drops of oil of lemons; rub them thoroughly together.

A useful ointment for the cure of itch.

Ointment of Wild Indigo. — Take one pound of powdered wild indigo root, moisten it thoroughly with alcohol, and let it stand twenty-four hours; then put it in a percolator, and add alcohol as long as the liquid which passes contains the taste of the root. Distil the alcohol from this filtered tincture until half a gallon of tincture is obtained. Melt one pound of fresh butter, without salt, add the above tincture, and carefully evaporate the rest of the alcohol; stir constantly till cold, after the alcohol has nearly passed off.

This is one of the preparations of the Eclectics, and is a cleansing, detergent, antiseptic, and discutient ointment, useful in scrofulous, erysipelatous, and malignant ulcers, eruptions of the skin, etc.

Pile Ointment. — Take three handfuls each of witch hazel bark, white oak bark, and sweet appletree bark; bruise or grind them, and add to them three pints of water; boil down to one pint, and strain; add to this liquid half a pound of lard, and simmer till the water all disappears, stirring continually both before and after removing from the fire till it cools.

This forms a brick-colored anodyne, astringent ointment, admirably adapted to the cure of pile tumors.

Compound Lead Ointment. — Take two and a half pounds of olive oil, four ounces each of beeswax and unsalted butter, and half a pound of white turpentine; melt them together, strain, and then heat to nearly the boiling point; then gradually add one pound of red lead, stirring constantly till the mixture becomes black or brown; then remove from the fire, and when it is partly cool, add to it a mixture of twelve ounces of honey, and half a pound of powdered camphor.

This is a very healing ointment, and is much used for ulcers, burns, wounds, and skin diseases.

Compound Sulphur Ointment. — Take one ounce of sulphur, one dram each of ammoniated mercury and benzoic acid, one fluid dram each of sulphuric acid and oil of bergamot, two drams of nitrate of potassa, and half a pound of lard. First, melt the lard with a gentle heat, then add the other ingredients, stirring constantly till they are cold.

A sovereign remedy for itch.

Pills.

Pills are small masses of medicinal substances, in globular shape, and of a size convenient for swallowing. Each pill generally weighs from three to five grains. Those medicines which cannot be dissolved in water, and are particularly unpleasant to the taste, are usually given in the form of pill. Sugar-coated, as now very extensively prepared by Tilden & Co., from every important medicine, and in a great variety of combination, they will doubtless become a very popular form of taking medicine. Physicians cannot do better than to use the pills of the abovenamed extensive manufacturing house.

The method of making pills is as follows: If the substance to be worked into pills be a solid extract, add a few drops of water to it, and rub it to the right consistence; if it be a resin, add to it a few drops of alcohol; if it be a soft or liquid substance, rub up with it some inert substance, or crumb of bread, or wheat flour, or starch, or pulverized gum arabic; if it be a powder, mix it with some soft substance, as confection, soap, or syrup, molasses, honey, or mucilage of gum arabic. The materials must be well mixed and rubbed into a uniform mass, which should be rolled with a spatula or case knife, into a cylinder of just the same size throughout. This is to be divided equally into the number of pills required, each of which is rolled into a spherical form between the thumb and finger, or upon the palm of one hand by the index finger of the other.

So many valuable pills are prescribed among the "Recipes," that it is not necessary here to add to their number.

Plasters.

Plasters are composed of wax, resins, gums, fats, and oils, and sometimes medicinal substances, and are spread upon linen, muslin,

or leather, — mostly the latter. When cold they are hard; but when brought to the warmth of the human body, they so far soften as to adhere firmly to the skin, but do not "run" so as to spread outward, and soil the under-clothes. They are intended generally to excite and irritate the skin; sometimes as mechanical supporters; and sometimes to affect the system by having their medicinal matters absorbed.

Belladonna Plaster. — Take three ounces of resin plaster, and an ounce and a half of extract of belladonna, add the extract to the plaster previously melted by a gentle heat, and mix.

A useful anodyne application in neuralgia, rheumatic pains, and dysmenorrhœa.

Compound Capsicum Plaster. — Melt together half a pound of resin, and two ounces of beeswax; to this add one pint of spirit in which two ounces of powdered cayenne, enclosed loosely in a linen bag, has been digested one hour by a gentle heat; evaporate the spirit by a moderate heat, and add one ounce of powdered camphor, and one fluid dram and a half of oil of sassafras; stir constantly till cold.

This may be used whenever a stimulating plaster is required.

Compound Galbanum Plaster. — Take two ounces of galbanum, three ounces of burgundy pitch, half an ounce of resin, half an ounce of yellow wax, and four ounces of lead plaster; melt them all together, over a gentle fire.

This is a valuable strengthening plaster, and may be used for weakness of various parts, as well as for scrofulous enlargement of glands and joints.

Compound Lead Plaster. — Take one pound of lead plaster; melt it by a moderate heat, and then add two fluid ounces each of linseed oil and tincture of opium, six fluid ounces of oil of turpentine, and two thirds of a pound of oil of origanum; stir together till cold.

Used for burns, scalds, chilblains, etc.

Compound Resin Plaster. — Take three pounds of resin, four ounces each of beeswax and hemlock gum; melt the articles together, then remove from the fire, and, when nearly cold, add gradually one fluid ounce each of oil of hemlock, oil of sassafras, and olive oil, with half an ounce of camphor dissolved in them, and half a fluid ounce of oil of turpentine. Pour the whole into cold water, and work in the hands till cold, forming it into rolls.

This is an excellent strengthening plaster, useful for rheumatism, enlarged joints, glands, and wherever a weakened part needs gentle stimulation and support.

Spiced Plaster. — Take one ounce each of powdered ginger, cloves, cinnamon, and black pepper; one dram of pulverized cayenne; half a fluid ounce of tincture of ginger; and a sufficient quantity of honey. Mix the powders, and then add the tincture and honey, to form a stiff poultice.

This is applied with great advantage over the stomach in cases of nausea and vomiting.

Compound Tar Plaster. — Boil three pounds of tar half an hour, then add one pound and a half of burgundy pitch, one pound of white gum turpentine (after having melted them together and strained). Stir together, then remove from the fire, and add ten ounces each of finely powdered mandrake root, bloodroot, poke root, and Indian turnip; mix thoroughly together.

This is an irritant, rubefacient, suppurative plaster, and is considerably used by the Eclectics, to produce counter-irritation and revulsion in neuralgia, rheumatism, and other painful affections, as well as in chronic inflammation of internal organs. To be spread thinly on soft leather, and renewed daily on the same leather. Four days are required to produce suppuration. If it produce great pain or inflammation, remove it, and apply mutton tallow, or elm poultice.

Lead Plaster. — Take one pound and a quarter of very finely powdered semivitrified oxide of lead, one quart of olive oil, and half a pint of water. Boil together over a gentle fire, stirring constantly till the oil and litharge unite and form a plaster. If the water nearly all evaporates before the process is completed, add a little boiling water.

A useful plaster for ulcers, burns, excoriated surfaces, etc.

Red Oxide of Lead Plaster. — Melt together one quart of olive oil, and one ounce each of beeswax and resin; heat to the boiling point, and then add gradually three quarters of a pound of powdered red lead. Stir constantly, and when the oil has taken up the lead, the mixture will be brown or shining black; then remove from the fire, and when nearly cold, add four scruples of powdered camphor, and stir together. It should not be removed from the fire until it has acquired a proper consistence for spreading, which may be easily ascertained by allowing a portion of it to cool on a knife.

This is a valuable plaster for scrofulous and syphilitic ulcers, also for burns, scalds, and several skin diseases.

Poultices. — *Cataplasms.*

Bread and Water Poultice. — Put the needed quantity of boiling water in a basin; throw in crumbled white bread, or cracker, and cover with a plate. When the bread or cracker has soaked up all it will, drain off the remaining water. Spread one third of an inch thick, and apply.

Flaxseed Poultices. — Put boiling water in a basin, and stir in flaxseed meal to make a thick paste. Spread on linen, and apply.

Yeast Poultice. — Mix half a pint of yeast with one pound of flaxseed meal. Stir carefully while heating.

Carrot Poultice. — Boil the proper quantity of carrots till they are quite soft. Strain off the water, mash them to a pulp, and add a little lard or sweet oil to prevent them from getting hard, then spread. A good application for malignant and offensive sores.

Oat Meal Poultice. — Place hot water in a basin, and stir in oat meal slowly, while it boils, till the poultice is of the right thickness; that is, till it will not run on the rag on which it is spread.

Indian Meal Poultice. — Made the same as oat meal poultice.

Arrow Root Poultice. — Mix two or more tablespoonfuls of arrow-root with a little cold water, in a basin, till it is all united with the water. Then add boiling water, and stir, till the whole becomes a thick paste.

Slippery Elm Poultice. — Stir ground slippery elm bark into hot water, and let it swell. This is a very soothing poultice for irritable sores.

Onion Poultice. — Made in the same way as the carrot poultice. This is quite stimulating, and induces indolent sores to maturate more freely. It is excellent for slow boils.

Charcoal Poultice. — Take either the bread and milk, or the Indian meal poultice, and stir into it one quarter its bulk of finely pulverized charcoal. Excellent for thoroughly cleansing a foul sore or ulcer.

Anodyne Poultice. — Take half an ounce of the extract either of foxglove, or henbane, or stramonium, or conium, or belladonna, and mix with it half a pint of tepid water. Then stir in as much flax-seed meal as will make a poultice of the right thickness. Always be careful not to apply this poultice where there is much skin off, lest the extract used be so much absorbed as to produce poisonous effects. These poultices allay the pain of cancerous and other sores.

Lobelia Poultice. — Powdered lobelia and ground slippery elm bark, each, one ounce. Stir these into hot weak lye, to make a poultice. For wounds, fistula, whitlow, boils, erysipelas, and stings of insects.

Poke Root Poultice. — Roast a sufficient quantity of fresh poke root in hot ashes. When it is quite soft, pound it, and make a poultice. To be applied to tumors to scatter them, or hasten their suppuration. To be removed every four hours.

Mustard Poultice. — Stir up a tablespoonful of ground mustard with a little water, to the consistence of paste. Spread upon linen or brown paper, and cover with thin muslin, that the mustard may not stick to the skin when the poultice is removed.

Powders.

A SINGLE substance used as a powder is called a *simple powder;* two or more united, a *compound powder.* Under the above head, I shall describe only compound powders. In preparing compound powders, the substances, if of different degrees of hardness, should generally be pulverized separately. Many powders require to be excluded from the light, which may be done by covering the bottles in which they are kept with black varnish.

Aromatic Powder. — Take two ounces each of cinnamon and ginger, and an ounce each of cardamom deprived of the capsules, and grated nutmeg. Rub them together into a very fine powder, and keep in well-stopped bottles.

The powder is stimulant and carminative, and in cases of weakened digestion, may be given in ten to thirty-grain doses.

Compound Powder of Aloes and Canella. — Take a pound of aloes, and three ounces of canella. Rub them separately to a fine powder, and mix them.

This is the preparation known as *hiera picra*, or simply *picra*. It may be used for amenorrhœa, or generally as a bitter to correct costiveness, and improve the appetite.

Compound Powder of Catechu. — Take two ounces each of catechu and kino, and half an ounce each of cinnamon and nutmeg. Reduce all to a fine powder, mix, and pass them through a fine sieve.

For chronic diarrhœa, dysentery, etc. Dose, from fifteen to thirty grains.

Compound Powder of Chalk. — Take half a pound of prepared chalk, four ounces of cinnamon, three ounces each of tormentil and gum arabic, and half an ounce of long pepper. Rub them separately into a very fine powder, and mix.

This powder is warm, stimulant, astringent, and antacid, and is well fitted for diarrhœa, not connected with inflammation.

Compound Powder of Chalk with Opium. — Take six ounces and a half of compound powder of chalk, and four scruples of powdered opium. Mix them.

The opium in this preparation increases the efficacy of the compound powder of chalk in diarrhœa. Dose for an adult, ten to twenty grains, and repeated after each discharge.

Compound Powder of Golden Seal. — Take two drams each of powdered golden seal, blue cohosh, and helonias, and mix them.

Useful in dyspepsia, and chronic inflammation of the mucous membrane of the stomach, etc. Dose, half a teaspoonful to a teaspoonful, three or four times a day.

Compound Powder of Hydrastin. — Take half a dram each, in powder, of hydrastin, leptandrin, rhubarb, and myricin. Mix thoroughly, and divide into thirty-two powders.

This is tonic and laxative, and is useful in dyspepsia, jaundice, chronic inflammation of the bowels, and during recovery from exhausting complaints. One powder may be taken often enough to produce one movement of the bowels a day.

Inhaling Powder. — Take one dram of crystals of nitrate of silver, and two and a half drams of lycopodium. Work the lycopodium into a very stiff paste, with a little warm water, in which the nitrate is dissolved. Spread this thin in a shallow dish, cover it so as to shut out the light, and set it where it will dry; when thoroughly dry, pulverize.

I have used this powder with great advantage in many cases of bronchitis, by directing three or four grains of it to be inhaled once a day, in an instrument I had constructed for that purpose. This is the only really valuable *catarrh snuff* ever used. A pinch of it taken once a day (never oftener) for nasal catarrh, will often do excellent service.

Compound Powder of Ipecacuanha. — Take a dram each of powdered ipecacuanha and opium, and one ounce of sulphate of potassa. Rub them together into a fine powder.

This is the well known *Dover's powder.* It is an admirable anodyne and diaphoretic, and is much used in inflammatory complaints, particularly rheumatism and pneumonia, complicated with low, typhoid symptoms. Dose, from five to fifteen grains.

Compound Powder of Jalap. — Take half an ounce of pulverized jalap and senna, one ounce of pulverized bitartrate of potassa, half a dram of pulverized ginger, and ten grains of pulverized cayenne. Mix thoroughly.

This is a valuable purgative medicine, and may be used in most cases where a simple cathartic is required. Dose, half a teaspoonful to a tablespoonful.

Compound Powder of Kino. — Take fifteen drams of kino, half an ounce of cinnamon, and a dram of dried opium. Rub them separately to a very fine powder, and mix them.

This is anodyne and astringent, and is useful in diarrhœa, etc.

Compound Powder of Rhubarb. — Take four ounces of powdered rhubarb, one pound of magnesia, and two ounces of finely powdered ginger. Mix thoroughly, and preserve in well-stopped bottles.

An excellent laxative and antacid, and well adapted to the bowel complaints of children.

Compound Powder of Rhubarb and Potassa (*Neutralizing Powder*). — Take half an ounce each of powdered rhubarb, bicarbonate of potassa, and peppermint leaves. Mix thoroughly.

Valuable in diarrhœa, cholera morbus, dysentery, summer complaint of children, sour stomach, heartburn, etc.

Worm Powder. — Take one ounce each of powdered white Indian hemp root (*asclepias incarnata*), mandrake, pink root, and bitter root; two ounces of powdered balmony, and four scruples of powdered aloes. Mix thoroughly.

A very good remedy for all kinds of worms. A teaspoonful of the powder may be mixed with a gill of molasses, and a teaspoonful of this given to a child every hour or two till it operates. After this, give a teaspoonful three times a day, for a few days.

Syrups.

A STRONG solution of sugar and water is a *simple syrup.* When the water is first charged with some medicinal substance, and sugar

is added to this, we have a *medicated syrup.* Refined sugar should always be preferred, in preparing medicated syrups.

Simple Syrup. — Take two and a half pounds of refined sugar, and a pint of water; dissolve the sugar in the water by heat, remove any scum that may arise, and strain while hot.

Syrup of Almonds. — Take a pound of sweet almonds, four ounces of bitter almonds, three pints of water, and six pounds of refined sugar. Blanch the almonds, then rub them in a mortar to very fine paste, and add, during the trituration, three fluid ounces of the water, and one pound of the sugar. Mix the paste thoroughly with the remainder of the water. Strain with strong expression, add the remainder of the sugar to the strained liquor, and dissolve by a gentle heat. Strain through fine linen, and after it is cool, put it into bottles, thoroughly stopped, and keep in a cool place.

This is demulcent, nutritive, and sedative, and is sometimes added to cough mixtures, etc.

Syrup of Citric Acid. — Take two drams of powdered citric acid, four minims of oil of lemons, and two pints of syrup. With one fluid ounce of the syrup, rub the citric acid and oil of lemons, then add the remainder of the syrup, and dissolve by a gentle heat.

This is much employed as an agreeable and cooling addition to drinks, especially to carbonic acid water. Tartaric acid, being cheaper than citric acid, is often substituted for it, and the preparation thus made is much sold under the name of *lemon syrup.*

Syrup of Garlic. — Take six ounces of fresh garlic, sliced and bruised, one pint of diluted acetic acid, and two pounds of refined sugar. Macerate the garlic in ten fluid ounces of the diluted acetic acid, in a glass vessel, four days, and express the liquor. Then mix the rest with what remains of the acid, and again express, till sufficient has passed to make the whole when filtered measure a pint. Then pour the filtered liquor on the sugar in a bottle, and shake till it is dissolved.

Excellent in the bronchial affections of children. Dose, a teaspoonful, for a child a year old.

Syrup of Ginger. — Add two fluid ounces of tincture of ginger to a quart of simple syrup; evaporate the alcohol by a gentle heat.

This is carminative and stimulant, and gives tone to the debilitated stomach, removing wind, etc. It is added to other medicines to improve their flavor.

Compound Syrup of Hypophosphites. — Take 256 grains of hypophosphite of lime, 192 grains of hypophosphite of soda, 128 grains of hypophosphite of potassa, 96 grains of recently precipitated hypophosphite of iron, 240 grains of hypophosphorous acid solution, 12 ounces of white sugar, half an ounce of extract of vanilla, and a sufficient quantity of water. Dissolve the salts of lime, soda, and potassa, in six ounces of water; put the iron salt into a mortar, and gradually add solution of hypophosphorous acid till it is dissolved:

to this add the solution of the other salts, after it has been rendered slightly acidulous with the same acid, and then water, till the whole measures nine fluid ounces. Dissolve this in sugar, with heat, and flavor with the vanilla. Without flavoring, this syrup is not unpleasant, being slightly saline, and not at all ferruginous. Any other flavoring may be used, as orange peel, orange flower, or ginger. It is also suggested to physicians that glycerine may be used, wholly or partially, in place of sugar, when indicated, six ounces and a half of glycerine being substituted for twelve ounces of sugar.

This syrup has been much used of late as a new remedy for consumption, on the authority of Dr. Churchill. It is elegantly manufactured by Dr. James R. Nichols & Co., of this city. Dose, a teaspoonful, three times a day before meals.

Syrup of Ipecacuanha. — Take one ounce of ipecacuanha, in coarse powder, one pint of diluted alcohol, two pounds and a half of sugar, and one pint of water. Macerate the ipecacuanha in the alcohol fourteen days, and filter; evaporate the filtered liquor to six fluid ounces, filter again, and add water to make the liquor measure a pint; then add the sugar, and proceed as directed for syrup.

This is chiefly used in complaints of children. Dose, as an emetic, for an adult, two fluid ounces; for a child a year or two old, one or two fluid drams. As an expectorant, for an adult, two fluid drams; for a child, five to twenty minims.

Syrup of Lemons. — Take a pint of strained lemon juice, two pounds and a half of refined sugar, and two and a half fluid ounces of rectified spirit; boil the juice ten minutes, and strain; then add the sugar, and dissolve. After the syrup has cooled, mix the spirit with it.

A cooling and grateful addition to drinks in fevers, and serves to cover the taste of salts and other purgatives.

Aromatic Syrup of Rhubarb. — Take two ounces and a half of bruised rhubarb, half an ounce each of bruised cloves and cinnamon, two drams of bruised nutmeg, two pints of diluted alcohol, and six pints of syrup. Macerate the rhubarb and aromatics in the alcohol for fourteen days, and strain; then, by a gentle heat, evaporate the liquor to a pint, and, while hot, mix it with the syrup previously heated.

This is a warm cordial laxative, admirably fitted for the bowel complaints of infants. Dose, a fluid dram, repeated every two hours till it operates.

Syrup of Seneka. — Take four ounces of fluid extract of seneka, and one pint of water; mix, and dissolve in the liquid one pound of refined sugar, and proceed as directed for syrup.

This is a stimulating expectorant, used in colds, coughs, etc., after inflammatory symptoms have subsided. Dose, for an adult, one or two teaspoonfuls, as often as necessary.

Syrup of Squill. — To one pint of vinegar of squill, add two pounds of refined sugar, and proceed as directed for syrup.

It is a useful expectorant for coughs and bronchial affections of infants and children. Dose, half a dram to a dram.

Syrup of Tolu. — Take two fluid ounces of tincture of tolu, and one pint of simple syrup; mix, and gently heat the mixture to evaporate the alcohol.

This is chiefly used to flavor other preparations.

Syrup of Wild-Cherry Bark. — Place two pounds and a half of coarsely powdered wild-cherry bark in a percolator, and pass through it one gallon of water. Strain this, and dissolve in it by heat sixteen pounds of refined sugar.

This makes an elegant tonic and sedative preparation, and is mixed with various other articles in prescribing for dyspepsia, consumption, etc.

Compound Syrup of Partridge Berry. — Take half a pound of partridge-berry, and two ounces each of helonias, blue cohosh, and high cranberry bark; add to them one quart of brandy, and macerate four days. Press out the brandy; and place the herbs in three quarts of boiling water, and boil down to two and a half pints. Strain, add one pound of sugar, and evaporate to two and a half pints. Remove from the fire, and when nearly cold, add the brandy previously pressed out.

This is considerably used by the Eclectic physicians, under the name of *mother's cordial;* and may be usefully employed by all physicians in suppression of the menses, painful menstruation, profuse menstruation, and habitual abortions. Dose from one to two ounces, two or three times a day.

Compound Syrup of Phosphates (*Chemical Food*). — Take ten drams of protosulphate of iron, twelve drams of phosphate of soda, twelve drams of phosphate of lime, twenty drams of phosphoric acid (glacial), two scruples of carbonate of soda, one dram of carbonate of potassa, sufficient quantity of muriatic acid, sufficient quantity of water of ammonia, two drams of powdered cochineal, sufficient water to make twenty fluid ounces, three pounds of sugar, and fifteen drops of oil of orange. Dissolve the sulphate of iron in two fluid ounces of boiling water, and the phosphate of soda in four fluid ounces of boiling water. Mix the solutions, and wash the precipitated phosphate of iron till the washings are tasteless.

Dissolve the phosphate of lime in four fluid ounces of boiling water, with sufficient muriatic acid to make a clear solution, precipitate it with water of ammonia, and wash the precipitate.

To the freshly precipitated phosphates, as thus prepared, add the phosphoric acid, previously dissolved in the water. When clear, add the carbonates of soda and potassa, and afterwards sufficient muriatic acid to dissolve the precipitate.

Now add the cochineal mixed with the sugar, apply heat, and when the syrup is formed, strain and flavor it.

This is an elegant syrup, agreeable both to the eye and taste, and has been extensively sold and used as a nutritive tonic, in chronic debility, in cases of broken down constitution, wasting of the flesh, etc.

Compound Syrup of Rhubarb and Potassa (*Neutralizing Cordial*).— Take half a pound each of powdered rhubarb and bicarbonate potassa, and four ounces each of cinnamon and golden seal; macerate for four days in one gallon of best fourth proof brandy. Express the tincture with strong pressure, and add to it two fluid drams of oil of peppermint, previously dissolved in a little alcohol. Break up the cake from the press, place it in a percolator, and gradually pass through it warm water till the strength is exhausted. Evaporate this solution to four quarts, and while the liquor is still hot, dissolve in it six pounds of refined sugar. Continue the evaporation, if necessary, till the addition of the tincture first obtained will make three gallons. Then add the tincture.

A valuable antacid and laxative in diarrhœa, dysentery, cholera morbus, and summer complaint of children. Dose, for an adult, a tablespoonful, to be taken as circumstances require.

Compound Syrup of Sarsaparilla. — Take a pound each of sarsaparilla, yellow parilla, and pipsissewa; an ounce and a half of guaiacum; one ounce each of red roses, senna, and liquorice root; and three minims each of oil of sassafras, anise, and partridge-berry; diluted alcohol, five pints, and four pounds of refined sugar. Grind and mix the sarsaparilla, yellow parilla, pipsissewa, guaiacum, roses, senna, and liquorice, and add to them the alcohol. Let the whole stand fourteen days; then express and filter. Evaporate by a water bath to one quart, and add the sugar. Lastly, rub the oils in a mortar with a little of the syrup, and thoroughly mix with the remainder.

This is a valuable alterative syrup, and is used for syphilis, scrofula, diseases of the skin, etc. It is much improved by adding half an ounce of the iodide of potassium to each pint of the syrup. Dose, a tablespoonful.

Compound Aromatic Syrup of Senna. — Take four ounces of senna, one ounce and a half of jalap root, half an ounce of rhubarb, one dram of cinnamon, one dram of cloves, and half a dram of nutmeg. Reduce these articles to a coarse powder; add one quart of diluted alcohol. Let the whole stand two days, and percolate. Filter, dissolve in it one pound of refined sugar, and add one dram of oil of lemons.

An excellent cordial physic.

Compound Syrup of Stillingia. — Take a pound each of queen's root and turkey corn; half a pound each of pipsissewa leaves and elder flowers; and four ounces each of prickly ash berries and cardamom seeds. Grind all the articles, mix, and place them in a jar, and moisten them well with alcohol. Let them stand two days; then place them in a percolator, and gradually add hot water till two pints are obtained, which must be strained and set aside. Then continue the percolation so long as there is a sensible taste of the spirit. Reserve this also. Then continue the percolation till what is obtained is almost tasteless. Boil down this last till the addition of the two reserved tinctures will make two gallons of the whole. Now add twelve pounds of refined sugar, and make a syrup.

This is one of the Eclectic medicines; and is quite an effective alterative for syphilis, scrofula, etc. Improved by adding iodide of potassium. Dose, from a teaspoonful to a tablespoonful.

Compound Syrup of Yellow Dock. — Take two pounds of yellow dock root, one pound of the bark of the root of false bittersweet, and half a pound each of American ivy and figwort. Make a syrup according to the directions for compound syrup of stillingia, using sixteen pounds of sugar, and making two gallons of syrup.

A valuable preparation for scrofula. Improved by iodide of potassium. Dose, a tablespoonful, three or four times a day.

Tinctures.

For a description of the method of making tinctures, see page 588, I will simply add here, that an *ethereal* tincture is one which is made with ether as the solvent instead of alcohol, and an *ammoniated* tincture, one made with water of ammonia as the solvent.

Simple tinctures, in which only one medicinal article is used, are made thus:

Tincture of Aconite. — Take eight ounces of powdered aconite root, and one pint of alcohol. Mix, and let them stand for two weeks, frequently stirring. Then express, and filter through paper.

Given in fevers and inflammatory diseases. Dose, three drops every hour or two in a little water.

In the above manner all simple tinctures are made. Some medicines require *alcohol* to extract their active principle; some only *diluted alcohol.*

One Ounce to the Pint of Alcohol. — In preparing simple tinctures from the following articles, *alcohol* is used, and *one* ounce only of the medicine is employed to the pint, namely:

Castor, Saffron, Leptandria.

One Ounce to the Pint of Diluted Alcohol. — In making tinctures from the following articles, one ounce is used to the pint of diluted alcohol:

Iodine, Quassia.

Two Ounces to a Pint of Alcohol:

Assafœtida, Camphor, Oil of Peppermint, Oil of Spearmint, Benzoin, Colchicum seeds, Lupulin.

Two Ounces to a Pint of Diluted Alcohol:

Cardamom, Cotton Bark, Cochineal, Colombo, Colchicum, Ergot, Galls, Hemlock, Cubebs, Foxglove, Black Hellebore, Henbane, Lactucarium, Lobelia, Poke, Shrubby Trefoil, Bloodroot, Squill, Valerian, Bittersweet, Belladonna.

Three Ounces to a Pint of Diluted Alcohol:

Peruvian Bark, Rhatany, Poison Hemlock, Sheep Laurel, Stramonium, White Hellebore, Yarrow, Prickly Elder, Jalap.

Four Ounces to a Pint of Alcohol:
Nux Vomica, Ginger, Guaiacum, Black Cohosh

Four Ounces to a Pint of Diluted Alcohol:
Yellow Jessamine, Prickly-ash Berries, Ergot, Matico.

The following tinctures embrace those which vary from the above proportions among the simple tinctures, and also the compound tinctures:

Tincture of Orange Peel. — Take three and a half ounces of dried orange peel, and one quart of diluted alcohol. Macerate for seven days, express and filter.

Tincture of Buchu. — Take five ounces of buchu, and one quart of diluted alcohol. Digest seven days; pour off the clear liquor, and filter.

Tincture of Indian Hemp. — Take of extract of Indian Hemp (Cannabis Indica) one ounce, and one pint of alcohol. Dissolve the extract in the spirit. Dose, from twenty to forty drops.

Tincture of Cantharides. — Take an ounce of bruised Spanish flies, and two pints of diluted alcohol. Macerate for fourteen days, express and filter through paper.
Dose, from twenty drops to a dram, three or four times a day.

Tincture of Cayenne Pepper. — Take an ounce of pulverized cayenne, and two pints of diluted alcohol. Macerate fourteen days, and filter through paper.

Tincture of Catechu. — Take an ounce and a half of catechu, an ounce of bruised cinnamon, and one pint of diluted alcohol. Let them stand together two weeks, frequently shaking; then express and filter.
Dose, from thirty drops to a tablespoonful.

Tincture of Cinnamon. — Take an ounce and a half of powdered cinnamon, and one pint of diluted alcohol. Let them stand together for two weeks; express and filter.
Dose, from one to four teaspoonfuls in sweetened water.

Elixir Vitriol. — Take half a pint of alcohol; drop into it seven fluid drams of sulphuric acid, and let the mixture stand three days in a close vessel; then add two drams of powdered ginger, and three drams of powdered cinnamon. Macerate seven days, and filter.
Useful in diarrhœa, dysentery, etc. Dose, from five to twenty drops To avoid injury to the teeth, it should be taken through a quill, or else the mouth should be rinsed immediately after swallowing it.

Tincture of Lobelia. — Take four ounces of lobelia, and one pint each of distilled vinegar and alcohol. Macerate two weeks, express and filter.
Dose, as a nauseant or expectorant, from thirty to sixty drops.

Tincture of Opium (*Laudanum*). — Take two and a half ounces of

opium, and two pints of diluted alcohol. Macerate fourteen days, express, and filter through paper. Dose, from ten to twenty-five drops.

Tincture of Tolu. — Dissolve one ounce of Balsam of tolu in one pint of alcohol, and filter.

Tincture of Rhubarb. — Take three ounces of bruised rhubarb, half an ounce of bruised cardamom, and a quart of diluted alcohol. Macerate two weeks, express, and filter through paper.

Tincture of Virginia Snake Root. — Take three ounces of bruised Virginia snake root, and one quart of diluted alcohol. Macerate two weeks, express, and filter through paper.

This is advantageously added to the infusion of Peruvian bark, in low states of the system. Dose, one to two fluid drams.

Compound Tincture of Aloes. — Take three ounces of powdered aloes, one ounce of saffron, and two pints of tincture of myrrh. Macerate fourteen days, and filter.

This is the well known *elixir proprietatis*, or, more commonly, *elixir pro.* It is considerably used in female disorders, connected with suppressed, retained, or deficient menstruation. Dose, one to two fluid drams.

Compound Tincture of Assafœtida. — Take half an ounce each of lupulin, assafœtida, in small pieces, bruised stramonium seeds, powdered valerian root, and one pint and a half of alcohol; macerate two weeks, shaking frequently, then express and filter.

This is anodyne and antispasmodic, and is used in epilepsy, St. Vitus's dance, and hysterics. Dose, a teaspoonful.

Compound Tincture of Benzoin. — Take three ounces of benzoin, two ounces of purified storax, one ounce of balsam of tolu, half an ounce of powdered aloes, and two pints of alcohol. Macerate two weeks, and filter.

This is used in chronic diseases of the air passages. Dose, from thirty to sixty drops.

Compound Tincture of Cardamom. — Take six drams of bruised cardamom, two ounces of bruised caraway, five drams of bruised cinnamon, five ounces of seeded raisins, one dram of bruised cochineal, and two pints and a half of diluted alcohol. Macerate two weeks, and filter.

This is a very agreeable aromatic; used as a carminative, and to improve other preparations. Dose, one or two fluid drams.

Compound Tincture of Catechu. — Take three ounces of catechu, two ounces of bruised cinnamon, and two pints of diluted alcohol. Macerate fourteen days, express and filter.

This is frequently added to chalk preparations for diarrhœa, etc. Dose, from one to three fluid drams.

Compound Tincture of Cinnamon. — Take one ounce of bruised cinnamon, half an ounce of bruised cardamom seeds, three drams of

bruised ginger, and two pints of proof spirits. Macerate fourteen days, express, and filter.

This is a warm, aromatic tincture, useful in spasms, and debility of the stomach. Dose, one to two fluid drams.

Compound Tincture of Black Cohosh. — Take one fluid ounce of tincture of black cohosh, half a fluid ounce of tincture of bloodroot, and two fluid drams of tincture of poke root. Mix.

This is used in diseases of the lungs, liver, and stomach. Dose, from twenty to sixty drops, three or four times a day.

Compound Tincture of Blue Cohosh. — Take one ounce of powdered blue cohosh root, half an ounce each of bruised water pepper and ergot, two fluid drams of oil of savin, and twelve fluid ounces of alcohol; mix, macerate for a fortnight, and filter.

A uterine tonic, used for suppressed and painful menstruation, etc. Dose, a teaspoonful, two or three times a day.

Compound Tincture of Colchicum. — Mix one fluid ounce each of tincture of black cohosh and tincture of colchicum seed.

Used for inflammatory rheumatism and gout. Dose, ten to sixty drops.

Compound Tincture of Gentian. — Take two ounces of bruised gentian, one ounce of orange peel, half an ounce of bruised cardamom seeds, and two pints of diluted alcohol. Macerate fourteen days, express, and filter.

An elegant bitter, much used in dyspepsia, and as an addition to tonic mixtures for a weakened state of the stomach. Dose, one or two fluid drams.

Compound Tincture of Golden Seal. — Take one ounce each of powdered lobelia seed and golden seal, and one pint of diluted alcohol. Macerate two weeks, express, and filter.

This is used as a local application to diseased mucous membranes, in leucorrhœa, gleet, etc.

Ammoniated Tincture of Guaiac. — Take four ounces of powdered guaiac, and a pint and a half of aromatic spirits of ammonia. Macerate for two weeks, and filter.

This tincture has considerable reputation in the treatment of chronic rheumatism. Dose, one or two fluid drams.

Compound Tincture of Hemlock (*Golden Tincture*). — Take one ounce each of powdered balsam of tolu, guaiacum, gum hemlock, and gum myrrh, one ounce and a half of oil of hemlock, one ounce of oil of winter green, and four pints of alcohol. Mix, let them stand fourteen days, shaking frequently, then filter.

This is used by the Eclectics for rheumatism, wind colic, water brash, soreness of the chest, etc. Dose, a teaspoonful in a wineglassful of water.

Compound Tincture of High Cranberry. — Take one ounce of high cranberry bark, powdered, half an ounce each of powdered lobelia seed and bruised skunk cabbage seed, two drams each of bruised

stramonium seed, powdered bloodroot, and capsicum, and two pints of alcohol. Macerate two weeks, express, and filter.

This is an Eclectic remedy, and is useful in nervous and spasmodic complaints, particularly hysterics, etc. Dose, from twenty drops to a teaspoonful.

Compound Tincture of Lavender. — Take three fluid drams of oil of lavender, one dram and a half of oil of anise, one ounce of powdered cloves, three drams of mace, one ounce of raisins, two ounces of red saunders, and one gallon of Jamaica rum. Mix, and macerate fourteen days; then express and filter.

This is often used for flatulence, hysterics, and faintness. Dose, from one to three teaspoonfuls, in water.

Compound Tincture of Lobelia (*Dr. J. King's Expectorant Tincture*). — Take one ounce each of coarsely powdered lobelia, bloodroot, skunk cabbage, wild ginger, and pleurisy root. Place them in a vessel, and pour over them one pint of boiling water or vinegar, and cover tightly. When cold, add three pints of alcohol. Macerate two weeks, then express and filter.

A valuable emetic for infants and children, in croup, hooping-cough, bronchitis, and convulsions. Used also as an expectorant, in coughs, pleurisy, etc. Dose, as an emetic for a child, half a teaspoonful and upwards.

Compound Tincture of Lobelia and Capsicum. — Take one ounce each of powdered lobelia, capsicum, and skunk cabbage, and one pint of diluted alcohol. Mix, macerate fourteen days, and filter.

A prompt antispasmodic in cramps, spasms, lock-jaw, etc. Dose, half a dram to a dram.

Compound Tincture of Myrrh (*Hot Drops*). — Take four ounces of bruised myrrh, two ounces of capsicum, and four pints of alcohol Mix, macerate a fortnight, and filter.

Applied externally, and occasionally given internally for distress of stomach, flatulence, etc.

Camphorated Tincture of Opium. — Take one dram each of powdered opium and benzoic acid, one fluid dram of oil of anise, two ounces of clarified honey, two scruples of camphor, and two pints of diluted alcohol. Macerate fourteen days, and filter.

This is known to all the world as *paregoric elixir*. It is an agreeable anodyne and antispasmodic, and a good deal used among children to allay cough, and to relieve pains, diarrhœa, etc.

Compound Tincture of Peruvian Bark. — Take two ounces of red bark, powdered, one ounce and a half of bruised orange peel, three drams of bruised Virginia snake-root, one dram each of saffron, cut, and red saunders, rasped, and twenty fluid ounces of diluted alcohol. Macerate two weeks, express, and filter.

This is *Huxham's tincture*. It is an excellent stomach cordial, and is used with advantage in low forms of fever, etc. Dose, from one to four fluid drams.

Compound Tincture of Rhubarb (*Sweet Tincture of Rhubarb*). — Take two ounces and a half of bruised rhubarb, six drams of bruised liquorice root, three drams each of bruised ginger and saffron, two ounces of refined sugar, and one quart of diluted alcohol. Macerate one week, express, and filter.

A warm, gentle aperient, well fitted for debilitated states of the stomach. Dose, from a dram or two to an ounce.

Tincture of Senna and Jalap (*Elixir Salutis*). — Take three ounces of senna, one ounce of powdered jalap, half an ounce each of bruised coriander and caraway seeds, two drams of bruised cardamom seeds, four ounces of sugar, and three pints of diluted alcohol. Macerate two weeks, express, and filter.

This is a warm cordial purgative, useful in costiveness, and gout attended with debility. Dose, two fluid drams to an ounce.

Compound Tincture of Tamarac (*Bone's Bitters*). — Take three ounces each of tamarac bark and juniper berries, two ounces of prickly-ash bark, one ounce and a half each of wild-cherry bark and seneca snake-root, and half an ounce of tansy; powder coarsely, and mix; then add one pint and a half of whiskey, and let them stand twenty-four hours; then place the whole in a vapor displacement apparatus, and force through the mixture, the vapor of another pint of whiskey, after which, steam from water enough to make the tincture equal to six quarts. To this add twelve ounces of molasses, and six drams of thoroughly dissolved alcoholic extract of mandrake.

This is tonic, diuretic, and aperient. Useful in dyspepsia, etc. Dose, a tablespoonful three times a day.

Ammoniated Tincture of Valerian. — Take four ounces of bruised valerian, and one quart of aromatic spirit of ammonia. Macerate two weeks, express, and filter.

This is used as an antispasmodic in hysterics, and other nervous diseases. Dose, one or two fluid drams, in sweetened water.

Compound Tincture of Virginia Snake-root (*Sudorific Tincture*). — Take eight scruples each, in coarse powder, of Virginia snake-root, ipecacuanha, saffron, opium, and camphor, and one pint of Holland gin, or proof spirit. Mix, macerate two weeks, express, and filter.

This tincture tends powerfully to induce perspiration, and is used for such purpose when it is desirable to procure sleep, etc. Dose, from ten drops to a teaspoonful, every hour or two, in catnip or balm tea.

Vinegars.

Vinegar of Lobelia. — Take two ounces of powdered lobelia seed, and one pint of distilled vinegar. Macerate in a close vessel one week; then express and filter, and add one fluid ounce of alcohol.

This is useful as an emetic and expectorant; externally, it is valuable in skin diseases. Dose, one to four teaspoonfuls, as often as necessary.

Vinegar of Squill. — Take two ounces of sliced squill, and one pint of distilled vinegar; macerate in a close glass vessel one week; then express, strain, and add one fluid ounce of alcohol.

This is expectorant and diuretic, and is sometimes used for coughs, and diseases of the chest.

Miscellaneous.

The recipes of a few popular proprietary medicines are given here merely as matters of curiosity.

Brandreth's Pills. — Take two pounds of aloes, one pound of gamboge, four ounces of extract of colocynth, half a pound of castile soap, two fluid drams of oil of peppermint, and one fluid dram of cinnamon. Mix, and form into pills.

Brown's Bronchial Troches. — Take one pound of pulverized extract of liquorice, one and a half pounds of pulverized sugar, four ounces of pulverized cubebs, four ounces of pulverized gum arabic, and one ounce of pulverized extract of conium. Mix.

Hunter's Red Drop. — Take ten grains of corrosive sublimate, twelve drops of muriatic acid, and one fluid ounce of compound spirits of lavender. Dose, five to twenty drops in water, or white wine, sufficient to produce one evacuation daily, but not over two.

Ayer's Cherry Pectoral. — Take four grains of acetate of morphia, two fluid drams of tincture of bloodroot, three fluid drams each of antimonial wine and wine of ipecacuanha, and three fluid ounces of syrup of wild cherry. Mix.

Mackenzie's Ointment. — Take four ounces of powdered sulphate of zinc, one ounce and a half of tar, and one pint of lard; mix, and boil slowly one hour, stirring all the time.

For tetter, scald head, and other diseases of the skin. To be applied twice a day, washing the part with castile soap-suds daily.

Wood's Hair Restorative. — Take four drams of lac sulphur, two drams of sugar of lead, and one pint of rose water. Mix.

Frey's Vermifuge. — Take one ounce of castor oil, one ounce of aromatic syrup of rhubarb, thirty drops of oil of chenopodium, five drops of croton oil. Mix.

Conchlin's Salve. — Take twelve ounces of resin, and one ounce each of beeswax, mutton, and tallow; melt together, strain, and work into rolls in cold water.

Canker. — *Aptha Communis.*

Very few, if any, standard medical writers have treated of canker. In truth, it is only a symptom of various complaints, and not itself a disease. It has accordingly been shut out from medical books. Following the general practice, I omitted it in this work. I now regret the omission, and place it here at the end. It afflicts — yes, *afflicts — sorely afflicts*, numerous persons, who, though doubtless affected by some constitutional disturbance, as its cause, are not conscious of any complaint except this single manifestation — Canker. You find not only the disease, therefore, but complaints respecting it, in almost everybody's mouth — "What shall I do for the canker?" meets us at almost every turn. "I am sorely afflicted with the canker," says one. "I am literally sick with the canker," says another. And a third says, "I can neither eat, nor converse, nor take rest, I am in such pain from canker in my mouth." And these complaints are not unnatural, for the sufferings occasioned by this affection are indeed terrible.

Canker begins in the form of small blisters, generally upon the tongue, or inside of the cheeks or lips, which, after a time, break and form little ulcers, which are oftentimes very sore and painful. These ulcers will, at times, not only multiply, but spread themselves to large dimensions, going deep into the flesh, and becoming painful almost beyond endurance. In many cases, the parts swell, and become so sensitive and tender that it is almost impossible to swallow the blandest food. The mouth will frequently become filled with saliva, which runs involuntarily out, to the great annoyance of the patient.

Treatment. — Canker is frequently dependent on a deranged state of the stomach and bowels. When this is the case, the treatment may begin with a dose of gentle physic (12), (15), (19), (26). If the stomach be quite permanently deranged, let this be followed with a somewhat prolonged use of prescription No. 28, or 37, or of the Neutralizing Cordial. If the mouth be very sore, use a tea of slippery elm bark, or flax-seed, or a solution of gum arabic; and as the inflammation subsides, touch the ulcerated patches with the stick nitrate of silver (lunar caustic); or use gargle No. 201, or 202, or 203, or 205, or 208, or 209, or 232, or 243, or 244, or sulphate of copper 8 grains, dissolved in two ozs. of water. A tea made of red raspberry leaves, or blackberry roots, may be freely used as a drink.

One of the best remedies is creosote. About ten drops may be mixed with an ounce of mucilage of gum arabic, well sweetened with loaf sugar. Of this, a dessert spoonful may be held for a few moments in the mouth, and then swallowed, from two to four times a day. Recipe 205 is not only useful as a gargle, but may be reduced by adding one pint of water, and may then be swallowed four or five times a day, in doses of two tablespoonfuls at a time.

The diet should always be carefully regulated, and only the more simple food taken, and at regular meals.

Diphtheria. — *Diphtheritis.*

During the past year the public heart has been impressed, and public fears extensively excited, by a new epidemic and contagious disease, called *diphtheria* — from a Greek word signifying *skin.* I say *new* disease, for it has been stated that as late as 20 years ago, no medical practitioner, either in England or America, had any personal knowledge or experience respecting it.

Yet the disease had existed in other countries, at periods of time more or less widely separated, from quite a remote antiquity. Aretæus is thought to have described it as early as the second century. Spain, Italy, and Sicily felt its ravages in the sixteenth and seventeenth centuries, and England, France, Germany, Holland, Italy, Sweden, and the United States about the middle of the eighteenth century; after which it seems to have disappeared, and been little heard of till quite recently, — so that the present generation of physicians have to meet it as a new disease.

Diphtheria is evidently a contagious epidemic. It would not, perhaps, be far out of the way, to call it by either of the following names: Epidemic Croup, Malignant Croup, Contagious Croup. Though originating, it is thought, in certain atmospheric conditions, it shows a remarkable affinity for particular localities, and exhibits special malignity and fatality in individual families. Some have thought it to be caused by the parasitic fungus called *oidium albicans*, which, fastening upon the mucous membrane of the throat, causes the exudation of matter, which hardens, with the fungus, into a skin, or membrane. Those who hold this view, consider the contagiousness of the disease to consist in the passage of the fungus from one person to another.

Symptoms.— The incipient stage of diphtheria is generally only a slight feeling of illness lasting for a few days, more or less, before the more serious attack. Sometimes during this period of indisposition, there is slight drowsiness or chilliness, followed by feverishness; sometimes headache and aching of the limbs. Generally, one of the first things complained of is a little stiffness or soreness of the neck, with a pricking sensation about the roots of the tongue. An almost characteristic symptom is a slightly swollen and tender condition of the glands at the angles of the lower jaw. The tonsils, one or both, are usually red and swollen, — sometimes swollen, but not red. In young children the redness is of the rose-color; in older children and adults, of a crimson or deep scarlet. The uvula, the velum, the arches of the palate, and the back wall of the pharynx, generally show the inflammation. Swallowing, though painful sometimes, is often easy enough, even to the end of bad cases. The pulse is usually quickened somewhat, and the warmth of the skin is raised a little, though not greatly, above the healthy standard.

In some cases, the above symptoms constitute the whole of the complaint — recovery taking place without serious consequences. In others, they are but the beginning of more alarming indications. In

such instances they are followed by the exudation upon the surface of fibrinous matter, which hardens into a leathery membrane. This membrane, if not broken up and removed, grows thicker and stronger by additions to its under surface, until it obstructs the breathing and strangles the patient. The exudation first shows itself upon the tonsils, or some neighboring part, in the form of white, gray, or ash-colored specks or patches, which gradually enlarge or spread until they meet and form one continuous pellicle. This membrane sometimes extends into neighboring parts, as the back passages to the nose, and the larynx, wind-pipe, bronchial tubes, and gullet. These extensions make the case all the more dangerous and unmanageable. I may add that there is great difference in the time occupied by different cases in running their course, — some reaching a climax only after several days' continuance, while others dash on to a fatal termination in the brief space of a few hours.

Treatment.— Blisters, and bleeding, and severe purging, and whatever else may tend to reduce the system, are to be carefully and always avoided. They invariably do mischief. The disease itself generally has a strangely depressing effect upon the vital powers. Never add to this depression by any exhaustive treatment.

Substances are in use, mentioned below, to which a *specific action* upon the diphtheritic mucous membrane is attributed, either disinfectant or parasiticidal. The parasiticidal action is based upon the undemonstrated parasitic nature of the disease; the disinfectant action is, in most instances, chiefly a deodorizing one, though a cleansing one also, which is of the greatest importance for the comfort of the patient and for the greater safety of his attendants. These substances are employed in the dry or liquid form, by insufflation or by inhalation, — in the latter instance several times a day. The remedy to be especially commended is common sublimed sulphur, to be used every four to six hours, by being blown through a long quill upon the affected parts, and allowed to remain for at least a half hour, without being disturbed by food, drink, or gargles.

This use of sulphur has many warm advocates; it is harmless, and cannot interfere with the action of most other remedies likely to be employed.

Gargles are often used with great advantage. The following is excellent: Chlorinated soda, one ounce; muriatic tincture of iron, half an ounce; water, six ounces; use every half hour or hour. The following is also a good gargle: Chlorate of potash, half an ounce; strong hydrochloric acid, eighty drops; water, one pint. One practitioner speaks of obtaining great success by the use of the tincture of black cohosh, mixed with an equal quantity of water, and employed, every few minutes, in two teaspoonful doses, as a gargle. Its use should begin at a very early stage of the disease.

The internal treatment should consist mainly of antiseptics and tonics. The muriatic tincture of iron is highly praised in this disease, as well for internal use as for external. Prescription 73 is a suitable

form in which to take it. If rose-water is not at hand, soft water may be substituted. If there be offensive breath, and a tendency to rotting of the tonsils, a little chlorinated soda, or chlorate of potash, may be added to the above: one or the other of these two last-named articles may sometimes be taken alone. The following is a good recipe: Pulv. guaiacum, two drams; pulv. gum arabic, one-half dram; pulv. white sugar, one dram; water, six ounces: mix, and then add chlorate of potash one-half dram. Let two great spoonfuls of this be taken once in two hours. The same dose may be taken, with similar frequency, of the following: Chlorate of potash, one dram; diluted hydrochloric acid, two drams; muriatic tincture of iron, three drams; water, twelve ounces; mix. This mixture may also be used as a gargle. Should there be great depression and sinking, — as there often is, — carbonate of ammonia may be taken, or muriate of ammonia (134), or aromatic spirit of ammonia, prescription 135, leaving out the laudanum. Brandy and wines are often used with advantage. In cases of great depression, if there be a tendency to the formation of purple spots upon the flesh, add ten to fifteen drops of hydrochloric acid to each dose of prescription 73. The following prescription is likewise a useful one: Quinine, diluted hydrochloric acid, and muriated tincture of iron, each two drams; cinnamon water, twelve ounces; mix. Dose, two great spoonfuls three times a day. Or the following: Muriated tincture of iron, one ounce; diluted hydrochloric acid, two drams; cinnamon water, twelve ounces. Mix, and take two table-spoonfuls every four hours.

The diet should generally consist of that which is nourishing and easily digested, — as beef-tea, chicken-broth, eggs, with wine, new milk, arrowroot, cream, etc. As recovery advances, beefsteak, lamb, chicken, etc., may be taken. Many patients die of pure debility. Let the diet, therefore, be such as to guard against such a termination of the complaint. Let all drinks be given warm, as cold drinks tend to aggravate the complaint.

When recovery begins to take place, use all possible precautions against a relapse. Let exercise taken at this time be gentle, and not pushed to the extent of great fatigue. The blood is generally reduced so low, that sudden death may result from overdoing.

Especially, let all cases of this complaint receive early attention. Throat ails, generally, while diphtheria is abroad, should have prompt and careful treatment, and if possible, be removed, for their presence invites an attack.

OLD AGE, AND ITS DISEASES.

LIFE, like the natural day, has its morning, its noon, and its evening. Each period has its sunshine and its clouds; its light and its darkness; its fair weather and its storms; its joys and its sorrows. The old do not feel the exhilarating brightness of the morning of life, nor the fervid strength of its noon; but they often experience what is better: a calm, quiet stillness, and peaceful repose, in its evening.

There is, perhaps, no one thing — certainly not many things — which impress the reflective mind and tender heart with more sadness, than to see an old man, bending low with years, with little or no self-restraint; the passions all untamed, except so far as age has quenched their fires; fretful, peevish, jealous, complaining; distrustful of the ways of Providence; doubting the integrity of any human being; surrounded by clouds and darkness; and stepping down gradually and reluctantly, amid a cold, drizly, sleety, moral rain, into a dark, uncheered, and unillumined grave.

On the other hand, how unspeakably pleasant it is to see the silver-haired pilgrim, in the evening time of life, cheerful, happy, trustful in God and hopeful of men; the winds and storms of life bringing little or no disturbance of his peace; bareing the head reverently and bowing it meekly in the presence of great afflictions, and lifting it up rejoicingly when blessings fall upon it; converting, by the soft, subdued, and beautiful sunshine which he spreads around him, the very unpromising elements of the latest autumn into the finest Indian summer of life; and finally sinking down peacefully to his rest amid the golden evening sunlight, and leaving the sky, long after, tinted with colorings more beautiful than artists ever conceived.

> "Why weep ye, then, for him who, having won
> The bound of man's appointed years, at last, —
> Life's blessings all enjoyed, life's labors done, —
> Serenely to his final rest has passed:
> While the soft memory of his virtues yet
> Lingers, like twilight hues when the bright sun is set?"

Beside these general reflections, it is proper in this chapter to contemplate the old from several points of view.

They are Experienced Persons, and we may learn much from them. To be sure, they have, in most cases, lost the acuteness of their

senses. They do not hear, or see, or taste as sharply as the young, or even always think as quickly; yet their judgments are founded on a large experience; their decisions, though not as prompt, or emphatic, or brilliant as those of younger persons, are more safe and reliable. They are worthy, therefore, of our respectful confidence. We may seek their council and advice, and in most cases follow it with safety. True, they are apt to be conservative, and to distrust new things and ideas; but these new things and ideas are matters in which they have had no experience — matters which belong to an age subsequent to their time — matters, therefore, which lie outside the sweep of their active life, and respecting which they should not be expected to judge. It is no disparagement to them to say that they are not fitted to judge of those new thoughts and discoveries which have swarmed upon the world since the sun of their life has been sinking low in the western sky. But in all those staple maxims and ideas which underlie human duties, in all ages, the old may safely be taken as our counsellors.

Depositories of Family History. — They are the frail depositories and keepers of a vast deal of valuable family history, anecdote, and reminiscences of events fast fading from human recollection. Few errors of my own early life have been so much regretted by me as the neglect to learn from my aged relatives, when I had the opportunity, some of the more important points in the history of my family. My grandfather, Col. Gideon Warren, — a first cousin of Gen. Joseph Warren, and a personal friend of Ethan Allen, — lived in some of the towns of southern Vermont, and finally spent his last days, and died, in Hampton, N. Y. There stands his tombstone to this day, with the following beautiful words from Young's Night Thoughts engraved upon it:

> "An angel's arm can't snatch me from the grave;
> Legions of angels can't confine me there."

These few facts are about the substance of what I know of his history. In what town his father settled, who was one of three brothers who immigrated to this country, or who were his brothers and sisters, or what became of them, I have not been informed, simply because I did not obtain the information, now so much desired by me, as I might easily have done, between thirty and forty years ago, while spending a year in Hampton fitting for college. An uncle of mine, Caleb Warren, was then living in Hampton, an old man. He had learned from my grandfather the full history of the family; and from him I might have derived knowledge which I should now value above price — knowledge which I intend yet to acquire, if the pressure of professional business shall ever be so lifted from me that I can command time for the investigation. But I shall never cease to remember the fact, or to lament my misimprovement of it, that from this venerable relative I might have learned facts and put them on record in one hour, which it will cost me weeks and months of correspondence, travel, and the searching of records to acquire. I say to all young persons, value very highly the knowledge of your family history, which

you may easily learn from your parents, grandparents, uncles and aunts, etc., and esteem those very highly who are able to impart it to you. Soon these living records will be suddenly blotted by the hand of death; and then no regret for past negligence will enable you to repair your loss, if you have misimproved your opportunity.

The Fathers of our Race and the Founders of our Institutions. — The aged people who yet linger among us are our fathers. We have our existence, through God, from them, and from others who have preceded them to the silent land. They educated the present race. All that is valuable in the moral principle and mental culture of the men and women of this generation, has been derived from them. Much of their lives was spent in training us, mentally and morally, and fitting us for usefulness.

Not only the fine moral and intellectual characters which are found everywhere, acting like salt and leaven in human society, are the work of their hands, but society, and government itself, have been handed down to us by them, with much valuable instruction as to the means of their preservation. We can scarcely conceive the amount of obligation our fathers have laid upon us in giving us these vast blessings. The men who have been the means of bringing us into life; who have educated and trained us; who have preserved our government and passed it into our hands unbroken; who have built and enlarged our colleges, established and improved our unequalled common schools; have founded and endowed our charitable institutions, and thus made our land famous throughout the world, are certainly worthy — those of them who are yet among us — of our constant regard and veneration.

Loneliness of the Aged. — The old are left, in some sense, alone in the world. The age in which they had their active being has gone by. The world has slid from under them; and they stand far out, as it were, on a narrow neck of land between this world and the next, from which they hear strange sounds coming to them from the moving mass of beings of whom they are soon to take leave. Most of the companions with whom they started in the journey of life have, one by one, dropped away from their side, and the younger and stirring multitude who have come after them, are moved by new, and to them strange, thoughts and aspirations. The throng of younger men is driven forward by impulses which they never felt, and in paths which they never trod. Manners, speech, dress, modes of doing business — all have changed. The old-fashioned fire-place, the stage-coach, the spinning-wheel, the hand-loom, the polite yes sir, and no madam, the boy's bow and the girl's courtesy to strangers in the street, — these all — some of them useful and some of no further value — have disappeared, never more to be enjoyed by those who so much prized them in their day.

What wonder if at times a sense of loneliness and desolation should steal into the minds of the aged? It is not without cause

that they often yield to melancholy reflections. The young have their companions, and their sports. The companions of the old have mostly gone; and for sports they have no agility. Cut off from the present, they are thrown upon the past, and too often look gloomily to the future. They should be sympathized with and encouraged. We should sit by their side, and talk with them of the manners and events of other days. Their conversation is often instructive as well as amusing. Would we engage in it with right feelings towards the old, it would be to us a source both of profit and pleasure. To a right-minded person, few things are more pleasurable than to sit by intelligent aged persons, cozily seated in a large armed-chair, and listen to their tales of personal adventure and experience. They enter upon such narratives with so much animation, and live over the past with such evident satisfaction, that the benevolent person would find pleasure in engaging them in that conversation for this reason alone.

Helpless Dependence of the Aged. — No one thing should tend more to excite our pity, compassion, and kindly feelings for old people, than their helplessness and dependence. It is one of the best indications of humanity to deal gently with the weak. The old are in their second childhood. In their day, they have been strong and vigorous — laboring, many of them, in season and out of season, to support their families and gain a competence. They have felled the primitive forests, and brought the soil under the dominion of the plough and hoe; they have constructed turnpikes and built bridges; made ships and sailed them over stormy seas, whitened every harbor with the emblems of commerce; filled every city with the beautiful creations of art, and the useful productions of mechanical handicraft; created systems of education and philanthropy; framed strong governments and worked them, — in a word, have carried the world upon their shoulders, without bending or giving tokens of exhaustion. But a multitude of years have robbed them of the strength which did all these things. They now totter like a young child. The brain which conceived and the arm which executed, are alike feeble. How proper that much which is kindly should now be done for those who have done so much for us and for the world! Oh, let the old have a warm place in the affections! Supply, as far as possible, all their wants. Go with them, in spirit, into the shadows of evening, within which they are retiring, and there hold them up. Be a staff to them in their weakness; and, if it be possible, when the shades deepen around them, lift the curtains of the future, and let in upon them, though it be never so few, some rays of light from the heavenly world.

From these general remarks, I pass to consider —

The Changes occurring in Advanced Life.

Growth, maturity, and decline are the three periods which divide and measure human life.

During growth, the deposit of new matter takes place more rapidly than the decay or waste which is also going on.

During healthy maturity, waste and increase are exactly equal, the one taking place just as rapidly as the other.

The decline of old age reverses the order of growth, and waste outstrips addition. The newly deposited matter comes, but not so rapidly as the old is cast away.

Declining Age may be said to extend from fifty to sixty.

Incipient Old Age from sixty to seventy.

Ripe Old Age from seventy to eighty.

Decrepitude or Second Infancy from eighty to the end of life.

During all these periods, particularly during the latter, important structural and other changes are occurring in the human system. Piles, apoplexy, paralysis, diseases of the liver, kidneys, and bladder, with organic changes of the heart, dropsy, chronic affections of the breathing organs, gout, etc., frequently appear.

No fear of Death. — It is a wise and merciful provision of Providence, that as old age advances, and the natural end of life draws near, the dread of death diminishes. As the aged gradually lose their hold upon life, they do so with less and less reluctance, until finally they let go willingly, and part from it even with joy. Persons passing from life at the age of eighty or upwards, generally look forward to death with more of pleasure than of fear. It is one good reason why it is desirable to live to great age, that life may come to a close without those harrassing fears which so many dread.

Preservation of Old People's Health.

It is proper here to speak of the *hygiene* of old age, or the means of *preserving* aged people's health.

It is natural to desire a continuance of life; and except in the case of the extremely old, there is a general wish for its prolongation. Those who are born of parents who have lived long, are more likely to attain length of days than those who have descended from short-lived ancestors; yet the influence of correct habits may add quite as many years to their lives.

Regular Habits. — The old feel the evil influence of irregular habits much more than the young. It is seldom that any *change* of habit long indulged, is well borne by the aged. So true is this, that the attempt to correct some habits of evil tendency is sometimes dangerous to the old so much have they lost the power of adapting themselves to change. The discontinuance of the habitual use of spirit, or tobacco, or opium by an old person, — though the use of either is of acknowledged evil tendency, will frequently prove fatal. It is almost necessary that the habits of the aged should remain as

they are. What an impressive lesson this fact gives the young on the necessity of forming good habits in early life!

Even the hours of taking meals should not be changed in the decline of life. Removing to new climates, and forming new social relations by those advanced in years, is not favorable to length of days. Old trees do not often take root and live long when transferred to a new soil.

Diet. — The food of old people should of course be easy of digestion. It is often the case that they bear made dishes such as "hash," so called, better than plain boiled or roasted meat. This can only be explained on the ground that the meat is chopped fine, and is more thoroughly cooked.

Mode of Cooking Meats. — This leads me to speak of the best methods of cooking meats so that they may be tender.

The flesh of all warm-blooded animals is identical in composition with that of human beings. That the flesh of animals used as food, therefore, may form flesh in the human body in the easiest manner, none of its essential constituents or parts should be taken from it during the process of cooking. If any one of its constituents is extracted, it will no longer be *like* human flesh; and that lost part will have to be resupplied before it can become a part of the frame of man.

Flesh is composed of two parts — that which can be dissolved, and that which cannot. The separation between these two parts is more or less completely effected in boiling according to the amount of water used, and the length of time employed in the process.

In making soup, we have no objection to a separation between the hard and juicy parts of the meat, because the latter passes into the water and helps form the soup. Hence the proper way is to put the meat into cold water when it is put over the fire, and let it come to the boiling point very gradually; during which time the juicy part has a chance to dissolve out, and, uniting with the water, make rich soup.

But when the meat is to be boiled simply, and eat as boiled meat, we should aim to retain the juice within it, that we may retain the whole of it. To do this, we must put the meat into water which is briskly boiling over the fire. The juice of the meat contains a large quantity of *albumen*, a substance just like the white of egg; and putting the meat suddenly into boiling water almost instantly hardens this albumen all around the surface, just as boiling water hardens white of egg, and this prevents all the juice of the inner portion of the meat from running out into the water and being lost. Keep the meat in the briskly-boiling water a few minutes, then pour in a little cold water to reduce the temperature slightly, and keep it in this somewhat reduced temperature until it is done through.

Broiling and roasting are pretty generally understood, and are done well enough where persons are disposed to take pains. Frying is an abomination; and should be banished from all civilized households.

Milk is an excellent article of diet for old persons. Except in some few cases where it disagrees with the stomach, it is among the very best. Sometimes, when it disagrees with a weak stomach, a little lime-water added to it will make all right. Artificial ass' milk, which will generally set well on aged people's stomachs, may be made by dissolving one ounce of pulverized sugar of milk in one pint of skimmed cow's milk.

Potatoes, beets, carrots, parsnips, and asparagus are healthful; peas, beans, cabbages, etc., had better not be largely indulged in.

Ripe Fruits, taken in moderation, are useful; but should be eaten at meal time, not between meals. Among these, ripe apples, pears, peaches, plums, strawberries, currants, and grapes are luxuries in which not even the oldest persons need fear to indulge to a reasonable extent.

Plain Puddings and Pies are not entirely objectionable; but all rich and high-seasoned articles of pastry should be strictly rejected by the old, as they should, in fact, by all classes.

Wine, etc. — If any persons in the world may indulge in a little wine for their stomach's sake, it is the old. But even they, if they have not been accustomed to its use, often get along very well without it; and when they can do so it is better, for various reasons, especially that their example may have a good influence with others. When the feeble vitality of the aged seems to require it, especially if they have been in the habit of leaning upon it, they should be encouraged to use it. And if they chance to be poor, and cannot procure it themselves, for friends to withhold it from them on the ground of economy, or from the feeling of grudging stinginess, is nothing less than inhumanity and cruelty.

To these remarks upon diet, I add: the old should never eat to excess or repletion. They should eat slowly, and chew their food very thoroughly.

Susceptibility to Cold. — Aged people suffer very much from cold hands and feet, and, indeed, from languid circulation and low temperature generally. The heart, like all their other muscles, has become feeble, and sends the blood very lazily along the arteries. The clothing of the old should be thicker and warmer than that of younger people. We must prevent the escape of what little animal heat there is by flannel worn next to the skin, and by woollen clothes generally — they being bad conductors of heat. Unless very fleshy, they seldom suffer from heat, even when their flannels are continued through the summer.

It is during winter nights that the old are apt to suffer most from cold. On going to bed, therefore, they should be warm; and in very cold nights should have a heated stone, or a bottle filled with hot water, at their feet. The communication of animal heat, particularly from the young, is better even than this to support the vital energies of age; and some writers have recommended that the vital warmth

of the old should be kept up by letting the young of our own species sleep with them. The humanity of this suggestion is very questionable. The aged would doubtless be benefited by such a proceeding; but the young would be injured. Whatever vitality should be gained by one would be lost by the other. While a few might be added to the limited days of the aged, many would be quite as likely to be subtracted from those of the young. I would much sooner recommend that old people attach to themselves, and take to their bed, an affectionate, clean, and silken-haired English terrier dog. Such an animal, usually as clean as a child, would impart warmth and vitality at night, and be a true, affectionate, and an amusing companion during many a lonely hour of the day. Whatever may be said against this recommendation, — and of course some over-nice people will object, — I insist that it is in every sense far more proper than the expedient adopted with King David, when he "was old and stricken in years," and after "they covered him with clothes, but he gat no heat." (1 Kings i. 1.)

Mortality in Cold Weather. — Far more of the old people die in winter than in summer, or, indeed, in any other season. For this reason, old people should be very careful how they expose themselves during the coldest days of the winter.

If there be any change which the old are likely to bear with impunity or advantage, it is from a cold to a warm climate in their latter years. The wealthy Romans, when they grew old, were taken to Naples.

Care of the Skin. — Attention to the skin, always important to health, is very essentially so in the latter years of life. The scarf-skin of the old tends to become dry, and peel off. This may be prevented in a great measure by regular washing with tepid water, and rubbing. If the bath cannot be endured, not even the sponge-bath, let friction alone be employed. For friction, either the naked hand, a piece of flannel, or the flesh-brush may be used. In rubbing the belly, the hand should follow the course of the large bowel; that is, in the region of the stomach pass across from right to left, down on the left, across on the lower parts of the bowels, up on the right, etc. By this method, constipation and a windy condition of the stomach and bowels may frequently be removed, or rendered less distressing.

Exercise. — Always important, in all periods of life, exercise does not lose its advantages in old age. But the aged should always exercise with moderation. The violence used in youth would break the bones, and do various kinds of mischief were it indulged by the old. Carriage exercise is very suitable for old people, but the more active exercise of horseback riding, walking, and even working in the garden, should not be omitted — bearing always in mind that great fatigue is injurious.

Sleep. — Aged people should get about as much sleep as nature asks for. They should retire early, and not be in haste to rise with the

dawn. They require more sleep than persons in middle life. Eight to ten hours in the twenty-four is not too much.

Sleeplessness. — Though the old require a good deal of sleep, it is unfortunate that many of them can sleep but little. A large proportion of persons far advanced in life, complain of inability to sleep. Many old people deceive themselves, and really sleep much more than they are aware. Yet they often persist that they sleep none at all, night after night. Their case is illustrated by an old lady whose doctor entered her room and found her sleeping very soundly and comfortably. The noise of a person entering the room awoke her soon after, when, rubbing her eyes, she turned to the doctor, and said all she wanted was sleep, that she had slept none for a month; and unless he could give her something to bring sleep, she must die.

Medical art, I am sorry to say, frequently fails to bring relief, when there is real want of sleep. Narcotics should always be avoided if possible. They do too much mischief; yet it is necessary, sometimes, to resort to them. Much may be done sometimes by taking an earlier or a lighter supper. Early rising, and exercise in the open air, will often bring sleep at night. Occasionally a glass of wine, or a little spirit of any kind, taken just before retiring, will bring the needed sleep.

Electricity. — In connection with sleep, the disturbing and the tranquillizing influence of electricity and magnetism has received some attention within a few years. A German philosopher contends that terrestrial magnetism exerts on persons of a sensitive organization a very soothing influence, when placed in proper relations with its currents, and a disturbing impression when otherwise situated. He cites cases, to show that lying from east to west is so intolerable that persons of delicacy cannot endure it; while the horizontal position from north to south, with the head south, is *more* agreeable; and *most* agreeable and tranquillizing with the head to the north. A German surgeon is mentioned in Reichenback's Memoirs, who always woke early in the morning, and turning his head where his feet had been, invariably fell into a sound slumber, which was more refreshing than that of the night. When he chanced to omit this, he felt ill all day. Observing that the head of his bed was directed to the south, Reichenback persuaded him to turn it to the north; and ever after he slept soundly till the proper time to rise in the morning.

Without pronouncing upon the correctness of this theory, I will simply say that in my winter residence in town, the head of my bed is to the south. I sleep *tolerably* well; but *not* as well as at my summer residence a little out of town, where the head of my bed is towards the north. How much the stillness of the country, and the greater purity of its atmosphere may contribute to this difference, I will not pretend to decide.

Medical Treatment of the Old.

In prescribing medicine for old people, we should bear in mind the difference between the sexes. Women in advanced life are less excitable, and enjoy better health, frequently, than in early life. Old men, on the contrary, are more nervous, in their latter years, and consequently more easily affected.

The physician cannot rely on the *reaction* of the system in old age. He must do more by his remedies, and depend less upon nature to help him out of straits.

The small power of rallying in the systems of the old, puts all blood-letting, severe purging, etc., entirely out of the question. the man is near enough to insanity who, except in some very *rare* case, bleeds the young. He who takes a drop of blood from the old, should be put in a straight-jacket and sent to the insane hospital.

Larger Doses. — The torpid condition of the system in old age, frequently requires larger doses of medicine to make an impression.

Fluid Medicines. — Pills and powders sometimes pass through the stomach and bowels in the same state in which they entered. Fluids are more readily appropriated — especially when the more active medicinal ingredient is mixed with wine, or some stimulating tincture, or aromatic water. These things rouse up the torpid stomach and bowels, and cause the medicine to take effect.

Medicine by Rectum. — When the disease is situated in the immediate neighborhood of the lower bowel, as the bladder, etc., it is sometimes better to administer the medicine by injection into the rectum.

Suitable Medicines for the Old. — The acids, the alkalies, and the neutral salts are unsuitable to be administered much to old people. All metallic medicines must be given sparingly, and with caution. Iodine and iodide of potassium are not very well borne. Narcotics must sometimes be used to some extent. Harsh and drastic purgatives are out of the question, except in some few instances in which they may be given sparingly in connection with compound tincture of gentian, or some other stimulating tonic. Sulphur is a valuable remedy for aged people. So are the stimulant tonics, bitters, astringents, gum-resins, balsams, etc., together with the various carminatives, as anise, coriander, fennel, cascarilla, ginger, etc.

Surgical Operations. — Some of the smaller operations in surgery need not be forbidden in the case of the old ; but great operations are not to be thought of. There is not recuperative power enough to bear them.

Diseases of the Old.

Most of the diseases which afflict aged people are of course much the same with those which come upon people at all periods of life.

These having all been treated of in the previous pages of this book, do not require to be gone over particularly again. There are a few complaints, however, which are peculiar to the old, of which I must briefly speak.

Bronchial Flux. — *Bronchorrhœa.*

A MORE than usual amount of mucous expectoration, accompanied with cough, is very common with old people — so common that in many cases they think very little of it, even when the expectoration becomes very profuse. This discharge, however, from the mucous surface of the bronchial tubes, is very apt to be attended by shortness of breath on making even very slight exertion; and the whole trouble is aggravated in damp weather, and by constipation, and the stoppage of leucorrhœa in females, or the interruption of insensible perspiration through the skin.

Slow progress. — This complaint makes very slow progress, as a general rule, often continuing many years without doing any great mischief. It is apt, however, to degenerate into a mischievous condition in the end; and should, therefore, as a general thing, receive some attention.

Treatment.— Attend carefully to the skin. Keep it in as healthy a condition as possible, by regular and faithful bathing and friction. This is of prime importance.

Care must be had not to suppress the discharge too suddenly. It may be necessary, at times, to use some expectorant (see expectorants among the prescriptions) to make the raising easier. But when it is thoroughly loosened up, we should begin to suppress it by astringent inhalations. For this purpose Inhalant No. 4 is excellent. It might be well, however, to begin with the Inhalant No. 6, which is slightly styptic.

If ulcers on the legs have recently healed, they should be opened, or blisters applied in their vicinity.

Removal to a *dry* climate is a valuable remedy, provided the climate is not too hot, and is healthful in every other respect.

Other Diseases. — The other diseases with which old persons are afflicted are so common to all ages, that I do little more than name them, adding a few general remarks.

Asthma. — The asthma, or intermittent difficulty of breathing of the old, is connected with various other troubles, as chronic inflammation of the bronchial tubes, air in the lung tissue, swelling of the lungs, enlargement and dilatation of the heart, and diseases of its valves, etc. It is also dependent on impurities of the blood, and is connected with torpid action of the kidneys. It is impossible, sometimes, to say which of these conditions it is dependent upon. As far as may be, however, the cause must be searched out; and then, while

the general remedies for asthma must be employed, the particular thing with which it is connected must also receive attention, especially if it be connected with derangement of the kidneys.

Asthmatic old people are almost always dyspeptics. The stomach and bowels, therefore, require particular attention. The warm purgatives, combined with alkalies, are generally useful: as rhubarb and soda, equal parts, or Mettauer's Aperient, with a little tincture of ginger or tincture of cayenne in it. A very valuable preparation is compound tincture of gentian and tincture of columbo, two ounces each, one half ounce of tincture of ginger, and half an ounce of bicarbonate of soda. Mix, and take a teaspoonful as occasion may require.

Apoplexy and Paralysis. — The nervous system being weakened in aged people, the way is opened for greater frequency of attack from apoplexy and paralysis. The exciting cause may be hyperæmia, too much blood; or anæmia, too little blood. It may be general debility, or gout, or a poisoned state of the blood.

The treatment is to be conducted much on the same principles as when these diseases occur in younger subjects.

I pass over numerous complaints which may be said to be somewhat more common in advanced life than at earlier periods. They are so fully treated in previous pages of this book, that it is deemed needless even to name them here. There is, however, one other class of diseases occurring so very often in old age, and in so many cases making advanced life a burden, that I cannot pass them wholly in silence. I refer to

Diseases of the Urinary Organs. — These afflict the old, not only very commonly, but very severely. An old man who reaches the age of seventy or eighty without experiencing some serious trouble from deranged kidneys, diseased bladder or prostate gland, or gall stones, or gravel, or unhealthy urinary deposits of some sort, may think himself greatly favored.

Treatment. — It is not necessary here to go over the whole ground of treatment. That is done in other parts of the book. I will say, however, that a surgical operation for stone in the bladder is not often to be thought of in the case of old people. Other remedies must be sought. And among these, none hold out so good a chance of relief as the free drinking of the alkaline bicarbonates dissolved in water. This will frequently dissolve stones formed of uric acid, urate of ammonia, and triple phosphates.

Pulmonic Cherry Cordial.

Wild-Cherry bark, ground, 10 pounds; ipecac root, 20 ounces; bloodroot, 24 ounces; squill root, bruised, 12 ounces; pulverized liquorice root, 5 ounces; cochineal, bruised, 2 ounces; anise seed, 32 ounces; fennel seed, 8 ounces; orange peel, 16 ounces; acetate of

morphine, 12 drams; alcohol, 8 gallons; water, 8 gallons; pulverized white sugar, 40 pounds; sulphuric acid, 1 ounce.

Directions for making. — Grind all the articles to a coarse powder except those directed to be bruised or pulverized, and put them *all* to the alcohol *except* the wild-cherry bark, the water, the sugar, and the sulphuric acid. Let them stand one week, shaking or stirring thoroughly twice a day. Then, having kept the wild-cherry bark two days in a covered vessel, with water enough upon it to wet it through, place it in a percolator, and run eight gallons of water through it. Add this to the alcohol and other ingredients. Let the whole stand three days longer, stirring as before, twice a day. Draw off, and filter through paper. Now add the sugar, and lastly the sulphuric acid. The acid is intended mainly to improve the color, by acting chemically upon the cochineal. The color is a fine cherry red, tinged with orange.

I have given the directions for making sixteen gallons — this being the smallest quantity in which I make it. Any person can easily make the calculation for reducing the quantity.

This is the preparation which I mentioned on page 226 of this book. Its insertion at the proper place was omitted by mistake; and I thought I would not mar the order of the book by inserting it out of place. I have much regretted this. Had I inserted it anywhere, it would have saved me the answering of a greater number of letters than I care to conjecture.

Upon no other preparation of medicine I have ever compounded have I bestowed as much thought and care as upon this. For five years I was incessantly experimenting, making and trying new combinations; and this is the result. The assertion previously made that this is the "best cough preparation ever made," I see no cause to modify in the smallest degree. Were it kept in every apothecary shop, and were physicians to prescribe in pulmonary complaints, adding a little syrup of squill or wine of ipecac when a more expectorant effect is wanted, or a little morphine if greater narcotism is sought, it would save them much trouble in compounding cough syrups, and give them much more satisfactory results. I have compared its effect, again and again, with the best other preparations in use, and I pledge my word that it will succeed in twice as many cases as any other compound that may be chosen. Let physicians try it; and I will be responsible for every hair's breadth in which they find this proportion of successful results abridged.

PHYSICAL CULTURE — THE NEW GYMNASTICS.

In America the noblest interests of the race have reached unparalleled developments. In no other country, in no other age, has mental culture been so complete and universal. It is an era in the progress of the race. The fruits of labor which in other times and lands have been wasted upon the abnormal life of the few, have here, like air and light, the two great representative gifts of Heaven, found their way to the normal life of the million. The grand ideal results of the philosopher's dreams seem within our grasp.

But in this hour of triumph the national life is jeopardized by physical exhaustion. While the admiring world looks on, our bodies upon which as a foundation our higher faculties must rest, crumble and give way. Precocious brains are borne about by doubtful spines; brilliant talents are linked with dying bodies.

But in the light which now begins to dawn, this rock in our nation's pathway is clearly seen, and the discovery must result in the adoption of vigorous measures. Already the leading educators of the country are aroused, and to use the language of that veteran educational magazine, the "Massachusetts Teacher," "To Dr. Lewis, more than to any other man, is the country indebted for the present deep *practical* interest in physical culture. He has done a noble work."

And in introducing the "New Gymnastics" invented and developed by Dr. Dio Lewis, of Boston, it may be proper to say that Dr. Lewis is a regularly educated physician. From the beginning of his professional career he evinced the most earnest interest in sanitary questions. Located in Buffalo, N. Y., during those memorable cholera seasons 1849 and 1851, in the midst of an immense practice, he called public attention to certain preventive sanitary regulations with such earnestness and force, that hearty municipal recognition and action were secured.

Some years since the Doctor abandoned the practice of his profession, and entered the field as a lecturer upon sanitary science. Both in this country and abroad all the great health questions were ably discussed. Three winters were devoted to lecturing in our Southern States. In many Southern cities a profound interest was elicited. About twenty pieces of silver plate were presented to the lecturer by

the various cities visited. The citizens of Richmond, Va., presented Dr. Lewis with an entire tea service of splendid silver plate.

A few years ago, Dr. Lewis began his investigations in the department of gymnastic training. The public is now pretty well informed in reference to his labors in this field. The journals and magazines of the country have spoken out in hearty commendation of "*Dr. Lewis's New Gymnastics.*" A few of these notices may be given.

"We look upon Dr. Lewis as one of the benefactors of his race."— *Grace Greenwood.*

"Success to Dr. Lewis's Gymnasium. No better institution exists." — *The Knickerbocker.*

"It was my privilege to welcome Dr. Lewis at his very first arrival here, and everything since then has only confirmed my confidence in his ability to superintend this system." — *Rev. Dr. Kirk.*

"We shall look for great results in the physical development of the nation, if this admirable system should be generally adopted." — *Boston Traveller.*

"Every muscle of the body is brought into motion without straining or unpleasant effort. Many of the attitudes are graceful and striking. In a word, it is poetry in motion, and motion set to music." — *N. Y. Tribune.*

"We are glad to hear that this simple apparatus and ingenious series of exercises are being introduced into many of the best schools of the State." — *Boston Courier.*

"The Boston Gymnasium has sent a graduate to our city who is teaching large classes, composed of our gravest divines, physicians, and others. Ladies mingle in the happy crowd." — *N. Y. Times.*

"This system avoids the objections of other systems. I have witnessed its effects in several schools, and can say they are all good without exception." — *President Felton, in an address at Dr. Lewis's Gymnasium, of which he was the presiding officer up to the time of his death.*

He has recently issued a handsome volume, known as "*The New Gymnastics for Men, Women, and Children,*" through Ticknor & Fields — a beautiful volume, full of illustrative cuts. The book has been so generally noticed by the press of the country that all have learned of its features. A single notice or two may be given.

"Dr. Lewis's book is the most practical, sensible work on this subject, extant in any language." — *Continental Monthly.*

"Dr. Lewis has given us far the best and most practical of all publications on the subject of physical culture." — *N. Y. Independent.*

This vigorous worker in the field of physical education has recently established in Boston a Normal Institute for physical education, in which he is preparing teachers of the New Gymnastics. About seventy persons of either sex have already been fitted, and have gone out to teach. Nearly every progressive school in the Northern States has more or less of the New Gymnastics in its daily drill. And so far as teachers can be obtained, the schools have added a gymnast to their corps of teachers. There is room for a thousand or ten thousand laborers in the new profession. Persons of either sex may find in this calling *health*, *usefulness*, and large profit.

In addition to the New Gymnastics, the graduates go out prepared

to teach elocution, and to act as guides in all other departments of physical culture. Dr. Walter Channing, Prof. Leonard the elocutionist, and other well-known scientific gentlemen assist Dr. Lewis in fitting the pupils for their important work. We are satisfied that this new profession is to become one of much dignity and importance. Those who enter the field early will have reason to congratulate themselves.

THE NEW GYMNASTICS.

BY DIO LEWIS, M. D.

THE apparatus used in my system of gymnastics is all light. This is its distinctive peculiarity. The dumb-bell weighs from one to four pounds. In the system heretofore in vogue, dumb-bells weighing as much as 150 lbs. have been used.

Perhaps no other piece of apparatus, common to the two systems, will so well illustrate the superiority of the new system.

Dumb-Bell Exercises.

FOR more than two thousand years the dumb-bell has been in use as a means of physical culture. It was highly prized by the Greeks. Many advantages are justly claimed in its behalf. If used in private, it occupies little space either at rest or in action. For the same reason it is excellent in the training of large classes. Although not to be compared with the New Gymnastic ring, the dumb-bell deserves its great popularity.

Among the Greeks it had a peculiar shape, and in this respect has undergone many changes, of which something will be said hereafter. Its present shape is well known. A practical suggestion upon this point may not be amiss. The handle should be at least half an inch longer than the width of the hand, of such size as can be easily grasped, with a slight swell in the middle. The manufacturer must not forget there is a wide difference between the hand of a little girl and that of a large man.

Heretofore dumb-bells have been made of metals, The weight in this country has usually been considerable. The general policy at present is to employ those as heavy as the health-seeker can put up. This is wrong. In the great German gymnastic institutes, dumb-bells were formerly employed weighing from fifty to one hundred pounds, but now Schreber and other distinguished authors condemn such weights, and advocate those weighing from two to five pounds. I think those weighing two pounds are heavy enough for

any man; and as it is important that they be of considerable size, I introduced, some years ago, those made of wood. Every year my faith grows stronger in their superiority.

In my early experience as a teacher of Gymnastics, I advocated heavy dumb-bells, prescribing for those who could put up one hundred pounds, a bell of that weight. As my success had always been with heavy weights, pride led me to continue their use long after I doubted the wisdom of such a course. For some years I have employed only those made of wood.

I know it will be said that dumb-bells of two pounds weight will do for women and children, but cannot answer the requirements of strong men.

The weight of the dumb-bell turns entirely on the manner in which it is used. If only lifted over the head, one or two pounds would be absurdly light; but if used as we employ them, then one weighing ten pounds is beyond the strength of the strongest. No man can enter one of my classes, of little girls even, and go through the exercises with bells weighing ten pounds each.

We had a good opportunity to laugh at a class of young men last year, who, upon entering the gymnasium, organized an insurrection against the wooden dumb-bells, and through a committee asked me to procure iron ones. I ordered a quantity weighing three pounds each; they used them part of one evening, and when asked the following evening which they would have, replied, "The wooden ones will do!"

A just statement of the issue is this: if you only lift the dumb-bell from the floor, put it up, and then put it down again, of course it should be heavy, or there is no exercise; but if you would use it in a great variety of ways, assuming a hundred graceful attitudes, and bringing the muscles into use in every direction, requiring skill and followed by a harmonious development, the bell must be light.

There need be no controversy between the light weight and the heavy weight party on this point. We of the light weight party agree that if the bell is to be used as the heavy weight party uses it, it must be heavy; but if as we use it, then it must be light. If they of the heavy weight party think not, we only ask them to try it.

The only question which remains is that which lies between all heavy and light gymnastics, viz.: whether strength or flexibility is to be preferred. Without entering upon a discussion of the physiological principles which underlie this subject, I will simply say that I prefer the latter. The Hanlon brothers and Heenan are physiologically considered greatly superior to heavy lifters.

But here I ought to say that no man can be flexible without a good degree of strength. It is not, however, that kind of strength involved in great lifting. Heenan is a very strong man, can strike a blow twice as hard as Windship, but cannot lift seven hundred pounds nor put up a hundred-pound dumb-bell. Wm. Hanlon, who is probably the finest gymnast, with the exception of Blondin, ever seen on this continent, cannot lift six hundred pounds. Such men have a

great fear of lifting. They know, almost by instinct, that it spoils their muscles.

One of the finest gymnasts in the country told me that in several attempts to lift five hundred pounds he failed, and that he should never try it again. This same gymnast owns a fine horse. Ask him to lend that horse to draw before a cart and he will refuse, because such labor would make the animal stiff, and unfit him for light, graceful movements before the carriage.

The same physiological law holds true of man: lifting great weights affects him as drawing heavy loads affects the horse. So far from man's body being an exception to this law, it bears with peculiar force upon him. Moving great weights through small spaces produces a slow, inelastic, inflexible man. No matter how flexible a young man may be, let him join a circus company, and lift the cannon twice a day for two or three years, and he will become as inflexible as a cart-horse. No matter how elastic the colt is when first harnessed to the cart, he will soon become so inelastic that he is unfit to serve before a carriage.

Men, women, and children should be strong, but it should be the strength of grace, flexibility, agility, and endurance; it should not be the strength of a great lifter. I alluded to the gymnastics of the circus. Let all who are curious in regard to the point I am discussing, visit it. Permit me to call special attention to three features — to the man who lifts the cannon, to the india-rubber man, and to the general performer. The lifter and the india-rubber man constitute the two mischievous extremes. It is impossible that in either there should be the highest physiological conditions; but, in the persons of the Hanlon brothers, who are general performers, is found the model gymnast. They can neither lift great weights nor tie themselves into knots, but they occupy a point between these two extremes. They possess both strength and flexibility, and resemble fine, active, agile, vigorous carriage-horses, which occupy a point between the slow cart-horse and the long-legged, loose-jointed animal.

With heavy dumb-bells the extent of motions is very slight, and of course the range and freedom of action will be correspondingly so. This is a point of great importance. The limbs, and indeed the entire body, should have the widest and freest range of motion. It is only thus that our performances in the business or pleasures of life become most effective. A complete, equable circulation of the blood is thereby most perfectly secured. And this, I may remark, is in one aspect the physiological purpose of all exercise. The race-horse has a much more vigorous circulation than the cart-horse. It is a fact not unfamiliar with horsemen, that when a horse is transferred from slow, heavy work to the carriage, the surface veins about the neck and legs begin at once to enlarge; when the change is made from the carriage to the cart, the reverse is the result.

And when we consider that the principal object of all physical training is an elastic, vigorous condition of the nervous system, the

superiority of light gymnastics becomes still more obvious. The nervous system is the fundamental fact of our earthly life. All other parts of the organism exist and work for it. It controls all, and is the seat of pain and pleasure.

The impressions upon the stomach, for example, resulting in a better or worse digestion, must be made through the nerves. This supreme control of the nervous system is forcibly illustrated in the change made by joyful or sad tidings.

The overdue ship is believed to have gone down with her valuable, uninsured cargo. Her owner paces the wharf, sallow and wan; appetite and digestion gone. She heaves in sight! She lies at the wharf! The happy man goes aboard, hears all is safe, and, taking the officers to a hotel, devours with them a dozen monstrous compounds, with the keenest appetite, and without a subsequent pang.

I am confident that the loyal people of this country have eaten and digested, since Roanoke and Donelson, as they had not before since Sumter.

Could we have an unbroken succession of good news, we should all have good digestion without a gymnasium. But in a world of vexation and disappointment, we are driven to the necessity of muscle culture, and other hygienic expedients, to give the nervous system that support and vitality which our fitful surroundings deny.

If we would make our muscle-training contributive in the highest degree to the healthful elasticity of our nerves, the exercise must be such as will bring into varied combinations and play all our muscles and nerves. Those exercises which require great accuracy, skill, and dash are just those which secure this happy and complete intermarriage of nerve and muscle. If any one doubts that boxing and small sword will do more to give elastitity and tone to the nervous system than lifting kegs of nails, then I will give him over to the heavy lifters.

Another point I take the liberty to urge. Without *accuracy* in the performance of the feats, the interest must be transient. This principle is strikingly exemplified in military training. Those who have studied our infantry drill have been struck with its simplicity, and have wondered that men could go through with its details every day for years without disgust. If the drill-master permits carelessness, then authority alone can force the men through the evolutions; but if he enforce the greatest precision, they return to their task every morning for twenty years with fresh and increasing interest.

What precision, permit me to ask, is possible in "putting up" a heavy dumb-bell? But in the new dumb-bell exercises there is opportunity and necessity for all the accuracy and skill which are found in the most elaborate military drills.

I have been a teacher of boxing and fencing, and I say with confidence that, in neither nor both is there such a field for fine posturing, wide, graceful action, and studied accuracy, as is to be found in the new series of dumb-bell exercises.

But, it is said, if you use bells weighing only two pounds, you

must work an hour to reach the exercise which the heavy ones would furnish in five minutes. I need not inform those who have practised the new series with the light bells, that this objection is made in ignorance. If you simply "put up" the light bell, it is true; but if you use it as herein described and illustrated, it is not true. On the contrary, in less than five minutes legs, hips, back, arms, shoulders, neck, lungs, and heart will each and all make the most emphatic remonstrance against even a quarter of an hour's practice of such feats.

At this point it may be urged that those exercises which hasten the action of the thoracic viscera to any considerable degree are simply exhaustive. This is another blunder of the "big-muscle" men. They seem to think you can determine every man's constitution and health by the tape-line; and that all exercises whose results are not determinable by measurement are worthless.

I need scarcely say, there are certain conditions of brain muscle, and of every other tissue, far more important than size; but what I desire to urge more particularly in this connection, is the importance, the great physiological advantages, of just those exercises in which the lungs and heart are brought into active play. These organs are no exceptions to the law that exercise is the principal condition of development. Their vigorous training adds more to the stock of vitality than that of other organs. A man may stand still and lift kegs of nails and heavy dumb-bells until his shoulders and arms are Sampsonian; he will contribute far less to his health and longevity than by a daily run of a mile or two.

Speaking in a general way, those exercises in which the lungs and heart are made to go at a vigorous rate, are to be ranked among the most useful. The "double-quick" of the soldier contributes more in five minutes to his digestion and endurance, than the ordinary drill in two hours.

I have said an elastic tone of the nervous system is the physiological purpose of all physical training. If one may be allowed such an analysis, I would add that we exercise our muscles to invigorate the thoracic and abdominal viscera. These in their turn support and invigorate the nervous system. All exercises which operate more directly upon these internal organs, as, for example, laughing, deep breathing, and running, contribute most effectly to the stamina of the brain and nerves. It is only this mania for monstrous arms and shoulders that could have misled the intelligent gymnast on this point.

But, finally, it is said you certainly cannot deny that rapid motions, with great sweep, exhaust more than slow motions through limited spaces. A great lifter said to me the other day, "Do you pretend to deny that a locomotive with a light train, flying at the rate of forty miles an hour, consumes more fuel than one with a heavy train moving at the rate of five miles?" I did not attempt to deny it. "Well, then," he added, with an air of triumph, "what have you to say now about these great sweeping feats with your light dumb-bells, as com-

pared with the slow putting up of heavy ones?" I replied by asking him another question. "Do you pretend to deny that when you drive your horse ten miles within an hour, before a light carriage, he is more exhausted than by drawing a load two miles an hour?" "That's my doctrine, exactly," said he. "Then," I asked, "why don't you always drive two miles an hour?" "But my patients would all die," replied my friend. I did not say aloud what was passing in my mind, — that the danger to his patients might be less than he imagined, — but I suggested that nearly every man, as well as every horse, had duties in this life which involved the necessity of rapid and vigorous motions; that were this slow movement generally adopted, every phase of human life would be stripped of progress, success, and glory.

As our artificial training is designed to fit us for the more successful performance of the business of life, I suggest that the training should be, in character, somewhat preparatory for those duties. If you would train a horse for the carriage, you would not do it by driving at a slow pace before a heavy load. If you did, the first fast drive would go hard with him.

Just so with a man. If he is to lift hogsheads of sugar, or kegs of nails, as a business, he may be trained by heavy lifting; but if his business requires the average velocity and free motions of human occupations, then upon the basis of his heavy slow training, he will find himself, in actual life, in the condition of the dray horse, who is pushed before the light carriage at a high speed.

Perhaps it is not improper to add, that, to me, all this talk about expenditure of vitality, is full of sophistry. Teachers and writers speak of our stock of vitality, as if it was a vault of gold, upon which you cannot draw without lessening the quantity, whereas, it is rather like the mind or heart enlarged by action, increased by expenditure.

When Daniel Boone was living alone in Kentucky, his intellectual exercises were, doubtless, of the quiet, slow, heavy character. Other white men joined him. Under the social stimulus, his thinking became more sprightly. Suppose that in time he had come to write vigorously, and to speak in the most eloquent, brilliant manner, does any one imagine that he would have lost in mental vigor and dash by the process? Would not the brain, which had only slow exercise in his isolated life, become bold, brilliant, and dashing, by bold, brilliant, and dashing efforts?

A farm boy has slow, heavy muscles. He has been accustomed to heavy exercises. He is transferred to the circus, and performs, after a few years' training, a hundred beautiful, splendid feats. He at length reaches the matchless Zampillærstation of Wm. Hanlon. Does any one think that his body has lost power in this brilliant education?

Is it true that in either intellectual or physical training, bold, brilliant efforts, under proper conditions and limitations, exhaust the powers of life? On the contrary, is it not true that we find in vig-

orous, bold, dashing, brilliant efforts the only source of vigorous, bold, dashing, and brilliant powers?

In this discussion I have not considered the treatment of invalids. The principles presented are applicable to the training of children and adults of average vitality.

In a work upon which I am now engaged, devoted to the "Movement Cure," to be published early in 1863, I shall advocate, and for reasons which will appear in the work, an entirely different policy.

In the mean time, I will rest upon the general statement, that all persons of both sexes, and of every age, who are possessed of average vitality, should, in the department of physical education, employ light apparatus, and execute a great variety of feats, which require skill, accuracy, courage, dash, presence of mind, quick eye and hand, — in brief, which demands a vigorous and complete exercise of all the powers and faculties with which the Creator has endowed us; while deformed and diseased persons should be treated in consonance with the philosophy of the *Swedish Movement Cure*, in which the movements are slow and limited.

It is but justice to the following series of exercises with dumb-bells, as well as to myself, to state that not only are they, with two or three exceptions, my own invention, but the wisdom of the precise arrangement given, as well as the balance of exercise in all the muscles of the body and limbs, have been well proved by an extensive use for several years.

It must not be forgotten that, in all the dumb-bell exercises the pupil should, as a beginning position, stand with his heels together, the toes separated so as to make between the feet a right angle, and the arms hanging by the sides, with the dumb-bells horizontal and parallel to each other.

Not only in all the exercises, but in all the changes from one exercise to another, the pupil must keep time to the music. In the absence of other musical instruments, a drum may be employed to mark the time; and even without this it may be kept by counting one, two; one, two; one, two.

It must be remembered that in no case should the pupil bend the legs at the knee, or his arms at the elbow, unless it is so directed. No rule in the dumb-bell exercises is so important as this. If it be forgotten, exercises with dumb-bells will lose more than half their value.

No. 1. The position is shown in *Fig.* 1. Thumbs outward. Bells *exactly horizontal.* Turn the thumb ends of the bells to the hips, and then back again to the position shown in the figure. *Repeat ten times.* Let the change be made with the greatest accuracy. When it is well done, no matter which end is at the hip, a straight rod run through one dumb-bell, lengthwise, would at the same time run through the centre of the other.

In this and all subsequent dumb-bell exercises, the pupil must be careful not to bend the elbows. When exceptions to this rule occur, they will be plainly indicated.

No. 2. Position seen *Fig.* 2. Keep the elbows pressed against the sides, and twist the bells so the ends are exactly reversed. Be sure they are exactly in line with each other, and the forearms parallel. *Repeat ten times.*

Figure 1.

Figure 2.

No. 3. In passing from No. 2 to No. 3, bring the bells to the chest, and on the next beat to the position in *Fig.* 3. The palms of the hands are upward. Bells exactly horizontal and parallel to each other. Turn the hands over, knuckles upward. Bells now exactly in the same position as before. *Repeat ten times.*

Figure 3.

Figure 4.

No. 4. In passing from No. 3 to No. 4, bring the bells to the chest, and on the next beat to the position in *Fig.* 4. The palms forward.

Twist the bells so the knuckles are forward. *Repeat ten times.* Arms to be kept parallel from first to last.

No. 5. Position as in *Fig.* 5. In passing from No. 4 to No. 5, bring the bells to the chest. Twist the arms so that the bells are exactly reversed.

It will be seen in the figure, the palms are upward. When the bells are reversed, the knuckles are upward. Keep the arms parallel. *Repeat ten times.*

In passing from one exercise to another, I have spoken of bringing the bells to the chest. They should strike the chest exactly at the point shown in *Fig.* 6.

Figure 5.

Figure 6.

No. 6. Thrust the two bells down by the side of the legs. Bring to the chest, and thrust them sideways. Bring to the chest and thrust them upward. Bring to the chest and thrust them forward.

Repeat these four thrusts five times.

When the down thrust is made, the pupil must be careful that at the lowest point the bells are precisely horizontal, and parallel to each other. When the side thrust is made, the arms must be horizontal, the bells perpendicular and parallel to each other. When the upward thrust is made, the arms must be accurately perpendicular, bells parallel and horizontal.

When the forward thrust is executed, the arms must be exactly horizontal, and the bells perpendicular and parallel.

No. 7. Raise the right-hand bell from the side of the leg into the arm-pit, five times. (*Fig.* 7.) Left, five times. Alternately and simultaneously, five times.

Be sure that each time when the bells come into the arm-pits they are exactly horizontal.

No. 8. Passing from No. 7 to No. 8, bring the bells to the chest; on the next beat to the top of the shoulders; on the next beat carry up

the right, reaching accurately the position seen in *Fig.* 8. *Repeat five times.* Left the same. Alternately and simultaneously, each *five times.*

Figure 7.

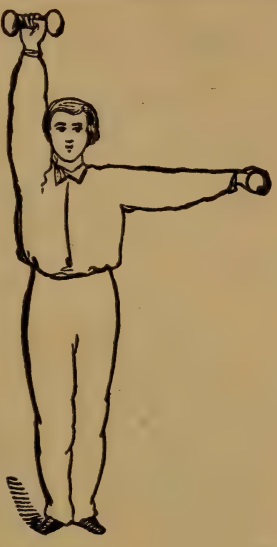


Figure 8.

No. 9. Passing from No. 8 to No. 9, bring the bells to the chest (the dotted lines in *Fig.* 9 show it), then down by the sides; in all, as usual, keeping good time to the music. Now carry the right bell

Figure 9.

Figure 10.

to the chest, then up, reaching the position shown in *Fig.* 9. Return to the hip, marking one beat on the chest in going down. *Repeat ten times.* Left, the same. Alternately and simultaneously, *ten times.*

No. 10. Bring the bells to the chest. Strike out the right one in front, arm precisely horizontal, bell perpendicular. (*Fig.* 10.) *Repeat twenty times.* Left, the same. Alternately and simultaneously, *twenty times.*

As usual, keep the chest well forward, and the shoulders drawn far back.

No. 11. Holding the bells in the position seen in *Fig.* 11, bring them with *great force* into the position seen in the dotted line, forty times. In beginning this elbow-thrust backward, it is well to first raise the bells a foot, that they may be brought back with more force, and more directly into the position seen in the dotted lines. But in carrying them forward again, it should be first into the position seen in the figure.

Figure 11.

Figure 12.

No. 12. Stamp the left foot, then the right, then charge out into the position seen in *Fig.* 12. Make sure that the leg behind, *in this and all subsequent charges*, is kept entirely straight, while the one forward is placed as shown in the figure. Holding the arms as illustrated, force the entire person into the position of the dotted lines, five times. *There should be no motion in the shoulder joints. The chest is pushed far forward, and the shoulders drawn well back.* These directions are applicable to all charging exercises, in which a different course is not plainly indicated.

It will be observed that the charge in No. 12 is exactly sideways.

Rise to the perpendicular again, stamp with the right foot, then the left, and lastly charge out on the left side, and repeat the performance of the right side *five times.*

No. 13. Rise to the perpendicular, stamp with the left foot, then with the right, then charge out as shown in *Fig.* 13. Under the directions given in No. 12, sink five times.

Same on the left side, of course with the intermediate stamping.

No. 14. After the regular stamping, the pupil should charge in the manner illustrated in *Fig.* 14. Sink five times.

Same on the left side.

In this, as in *Figs.* 12 and 13, the charging is exactly sideways.

Figure 13-14.

No. 15. Stand upright, hands by the side. Raise the right hand, as shown in *Fig.* 15, five times. Left, the same. Alternately and simultaneously, five times.

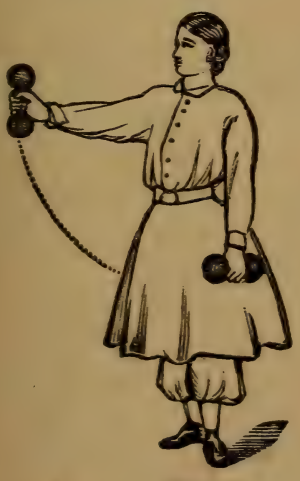


Figure 15.

Figure 16.

In this the arm is carried up with a quick, strong effort, and arrested at the horizontal line, precisely as if it had struck a rock. When it is brought back to the side again, it is with the same force and sudden arrest. This and the next one are among the most severe of the dumb-bell exercises.

No. 16. Assuming the position seen in *Fig.* 16, force back the right arm, as seen in the dotted line, five times. Left the same. Alternately and simultaneously, five times.

The arm must not be bent at the elbow.

The directions given in No. 15, in regard to force and sudden arrest, are applicable to this exercise.

Figure 17.

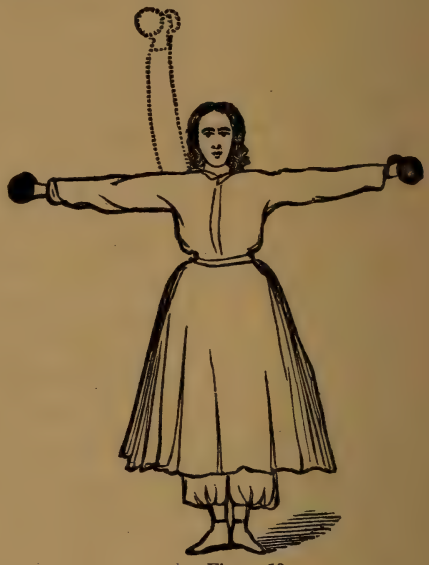


Figure 18.

No. 17. Beginning as in No. 15, with the arms hanging, combine the two exercises, Nos. 15 and 16, in one sweep, reaching the posi-

Figure 19.

Figure 20.

tion of the dotted line in *Fig.* 17. Repeat five times. Left hand the same. Alternately and simultaneously, five times.

No. 18. Stand upright, arms hanging. Raise the right arm to the horizontal, at the side, with the palm up. Repeat five times. Left, the same. Alternately and simultaneously, five times. The position of one of the arms is seen in *Fig.* 17.

No. 19. Having the arms extended at the sides as shown in *Fig.* 18, raise the right arm to the position seen in the dotted line, five times. Left, the same. Alternately and simultaneously, five times.

In raising the dumb-bells over the head, be careful that they are in such a position that, when the two are up together, they are exactly horizontal and parallel to each other.

No. 20. Beginning as in No. 18, arms hanging, combine Nos. 17 and 18, in one sweep, each arm five times. Alternately and simultaneously, the same.

Figure 21.

Figure 22.

No. 21, Standing upright, arms hanging, charge into the position shown in *Fig.* 19; remaining thus, thrust the arms in front, in a horizontal line, five times, alternately and simultaneously. Rising to the perpendicular, stamp with the right foot, then the left, then charge out with the left foot, and repeat the exercises with the arms.

It will be seen by the figure that the leg behind is kept entirely straight and rests on the toe. The special point in this exercise is to reach the dumb-bell as far forward as possible.

No. 22. Standing as represented in *Fig.* 20, force the right arm into the position shown in the dotted line, five times. Left the same. Alternately and simultaneously, five times.

In this exercise keep the body as erect as possible.

Figure 23.

No. 23. Having the arms perpendicular over the head, perform the same exercise as in the last number, with right hand, left hand, then alternately and simultaneously.

No. 24. Placing the feet in position of *Fig.* 21, raise the arms with great force from the hanging position to that seen in *Fig.* 21. On the next beat bring the arms to the position seen in *Fig.* 22; on the next to that seen in *Fig.* 23; on the next beat sweep back to the position seen in *Fig.* 22; then to the position seen in *Fig.* 21. *Repeat five times.* Stamp right and left, then step out with the left foot, then swing the arms over the head, performing the same exercise on the left side.

In this exercise neither arms nor legs should be bent.

No. 25. Stand erect, arms horizontal in front and parallel to each other. Carry the right hand backward in the horizontal plane (*Fig.* 24) as far as possible; return it. Repeat ten times. Left the same; alternately and simultaneously, ten times.

Figure 24.

Figure 25.

No. 26. Standing erect, arms hanging, stamp with the left foot; then with the right; then charge into the position seen in *Fig.* 25, and thrust the arms in a direct line upward, alternately and simultaneously, ten times. Assuming the erect position, drop the arms by the side, stamp the right foot, then the left, and charge out on the left side; repeat the exercise with the arms.

In this exercise, it will be seen, the leg behind is straight, that charged forward, considerably bent.

No. 27. As in nearly all other exercises, begin with the heels

Figure 26.

Figure 27.

together, body erect, chest forward, shoulders back, arms hanging, dumb-bells horizontal and parallel to each other. Step diagonally

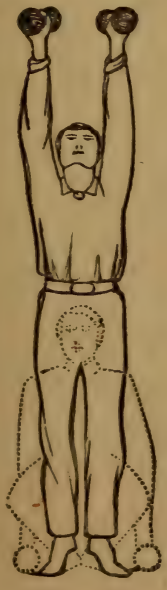


Figure 28.

Figure 29.

backward with the right foot, as seen in Fig. 26, and repeat the exercises in No. 26. Same with the left foot.

In this exercise the forward leg is kept straight, that behind is bent as much as possible.

No. 28. Bells on the chest. Carry the right arm out at the side, thrusting it as far back as possible; suddenly bring it back to the chest in a circle as if grasping a large body standing in front. Repeat five times. Left hand, same. Alternately and simultaneously, same.

Figure 30.

In this exercise the arms should be kept in the horizontal plane, and should in the performance of the exercise enclose as large an armful of the imaginary objects as possible.

No. 29. Standing erect, arms hanging at the side, suddenly turning the body to one side as far as you can twist it without moving the feet, carry the arms to the position seen in *Fig.* 27. Bring them back to the sides, while at the same time you bring the body to the first position. Swing the arms up on the other side, and so continue, alternating twenty times.

No. 30. Standing erect, arms hanging, bring the bells to the chest, then to the floor, as shown in the dotted line in *Fig.* 28; then rising, bring the dumb-bells again to the chest, and on the next beat thrust them as far upward as possible, rising on the toes; then back to the chest. Repeat twenty times.

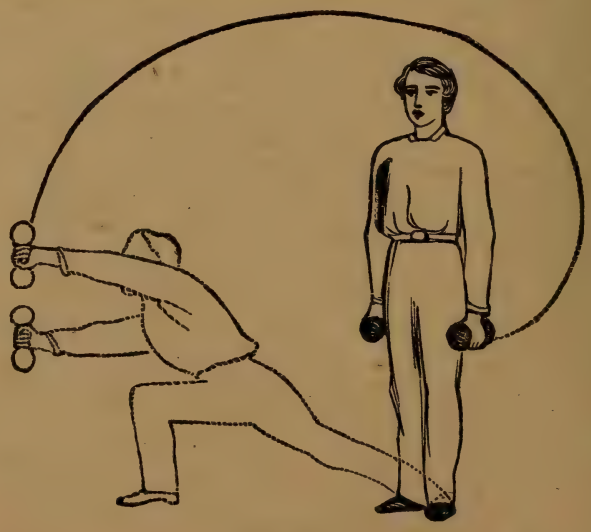


Figure 31.

No. 31. Standing erect, dumb-bells on the shoulders (not on the

chest), thrust the right arm out at the side as seen in *Fig.* 29, ten times. Left, the same. Alternately and simultaneously, the same.

No 32. Standing erect, arms hanging, carry the arms to the horizontal in front; then to the position over the head seen in *Fig.* 30; now down to the horizontal again, and then to the floor as seen in the dotted line. Repeat ten times.

In this exercise there must be no bending at the knees or elbows.

No. 33. Standing erect, arms hanging, charge out with the right

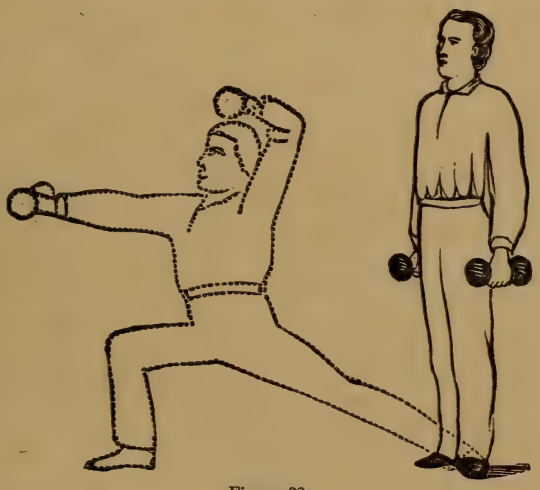


Figure 32.

foot, and sweep the left arm as shown in *Fig.* 31; on the next beat return to the first possition. Repeat five times. Same on the left side. Alternately, five times.

No. 34. Standing erect, arms hanging, without moving the body carry the right foot out sideways, lifting it from the floor, and bringing it back to the other foot, without bending the knee, five times; then charge into the position seen in *Fig.* 32, and return to the first position, five times.

The arm which is brought over the head must be carried in a direct line from the side to the position over the head, and not brought toward the front of the body in its passage up or down.

Bag Exercises.

THE use of small bags filled with beans, for gymnastic exercises, was suggested to my mind six years since, while attempting to devise a series of games with large rubber balls. Throwing and catching objects in certain ways, requiring skill and presence of mind, affords not only good exercise of the muscles of the arms and upper half of the body, but cultivates a quickness of eye and coolness of nerve very desirable. Appreciating this, I employed large rubber balls, but was constantly annoyed at the irregularities resulting from the difficulty in catching them. When the balls were but partially inflated, it was observed the hand could better seize them. This at length suggested the bean bags. Six years' use of these bags has resulted in the adoption of the following, as the best size and shape.

The material is a strong bed-ticking. Bags for young children should be, before sewing seven inches square: for ladies, nine inches: for ladies and gentlemen exercising together, ten inches; for gentlemen alone, twelve inches. Sew them with strong linen or silk thread, doubled, nearly three quarters of an inch from the edge, leaving a small opening at one corner to pour in the beans. Fill the bags three quarters full, and they are ready for use. If used daily, once in two weeks they should be emptied and washed. To allow them to be played with after they are soiled, is pretty sure to furnish much dust for the lungs of the players, beside soiling the hands and clothes. There cannot be too much care exercised in regard to this point of cleanliness. Before the beans are used the first time, they should be rinsed with water until it runs from them quite clean, when they must be dried; and every month or two afterwards this cleansing should be repeated.

The dirty carelessness with which these bag exercises are generally managed, makes them a positive nuisance.

Premising this indispensable preparation and care of the bags, I shall now proceed to give those exercises which I have found best adapted to schools and gymnasiums.

Fig. 1 represents a series of hoops lashed between two strong ropes and stretched across the room, the ropes fastened on the side of the room into staples, and on the other running through pulleys. By these means the ropes may be drawn very taut. It is well to fasten the staples and pulleys into slides, that the hoops may be altered for persons of different ages.

Figure 1.

Nearly all the exercises with bags are greatly improved by throwing them through the hoops. It will be observed the cut srepresent the player as throwing the bags quite high. This has reference to the hoops. But the bags may be thrown between the players without the hoops.

No. 1. Arrange yourself in two classes. Classes face each other, six feet apart. Members of one class will each have a bag. The other class will have no bags. Each person will play with the one standing exactly opposite. Hold the bags under your chins

Figure 2.

Figure 3.

(*Fig.* 2). When one gives the work, each couple is to throw its bag backwards and forward ten times, counting both ways. At the beginning of this and the following exercises, the leader will announce how many times the bag is to be thrown.

Figure 4.

Figure 5.

Figure 6.

Each couple will play as rapidly as possible, and as each finishes, the two players will hold up their hands, and cry out the number in a loud voice. Now ready! *One, two,* THREE!! The bag is always to be thrown from the chest, never to be thrown from the lap.

No. 2. Same as the last, except the bag is thrown and caught with the right hand. The position is well shown in *Fig.* 3.

No. 3. Same as the last, but with the left hand. When the right hand throws, the partner's right hand must catch, and so with the left.

No. 4. In this one, the bag is thrown with both hands, from the position seen in *Fig* 4.

Figure 7.

Figure 8.

Figure 9.

No. 5. Same as the last, except the bag is thrown with the right hand, as shown in *Fig.* 5. The unoccupied hand in this and all other single-handed bag exercises is to be held on the corresponding side, with the arm akimbo.

No. 6. Same as the last, except with the left hand.

No. 7. The bag is to be thrown over the head from the position seen in *Fig.* 6.

Figure 10.

Figure 11.

Figure 12.

No. 8. To be thrown from the position seen in *Fig.* 7, with the right hand. The one who catches must receive it, while the left hand grasps the arm in the same way.

No. 9. Same as the last, only using the left hand.

No. 10. Standing with your right side toward your partner, hold

the bag on the point of the elbow, being sure to keep the forearm vertical (*Fig.* 8); throw from this position the number of times announced by the leader. To be caught in the hands.

No. 11. Same as the last, except the left side is turned, and the bag is thrown from the left elbow.

No. 12. Hold the bag as represented in *Fig.* 9, and toss to your partner. He will of course return in the same manner to you, and thus it will be tossed backward and forward the number of times indicated by the leader. As in all the other exercises thus far given, each couple upon reaching the indicated number, will hold up their hands and cry out that number in a loud voice.

No. 13. Turning your right side to your partner, throw from the

Figure 13.

Figure 14.

Figure 15.

position represented in *Fig.* 10. Your partner catches the bag, standing in the same attitude.

No. 14. Same as the last, except you turn your left side to your partner, and throw with the left hand, either without bending the knees, as seen in *Fig.* 11, or bending them, as seen in *Fig.* 10.

No. 15. Again turn your right side to your partner, and throw the bag from the position seen in *Fig.* 12.

No. 16. Same as the last, except turning the left side, you throw with the left hand.

No. 17. Turn your back to your partner, and bend backwards, so that you can see him He bends back, so that he may see you, and then you throw the bag to him as represented in *Fig.* 13. Always cry *ready!* that he may not be kept waiting too long in an uncomfortable position.

No. 18. Face your partner, and throw from the position represented in *Fig.* 14, holding the bag on the back of the hand.

No. 19. Same as the last, except the left hand is employed.

No 20. Face your partner, and throw the bag around the back and over the opposite shoulder, as shown in *Fig.* 15.

No. 21. Same as the last, except you see the other hand.

No. 22. Each couple having ten bags, you throw to your partner, and he catches as many as he can hold, folding his arms. (*Fig.* 16.) This one will not ordinarily be played in class, as the number of bags will scarcely be sufficient.

No. 23 The two classes will stand as represented in *Fig* 17. Place ten bags on a chair or box at the feet of the first player of each class. The leader gives the word, *one*, *two*, *three!* and the two classes compete in passing the bags over their heads backwards, to the foot of the class, when they whirl round and immediately pass them back The class which has the entire ten on the chair or box at its head, first, counts one in the game. It is usual to make the game three, five, or ten.

Figure 16.

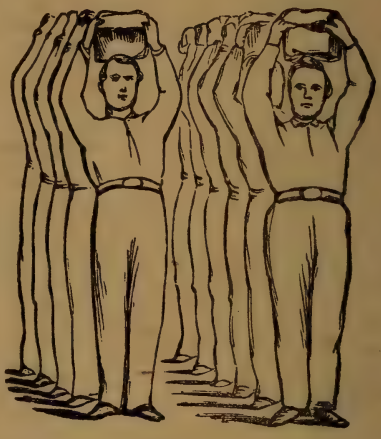


Figure 17.

No. 24. Let the two classes face each other again, and pass the bags as in the last, except that they are carried along in front and as high as the chest, being careful not to stoop forward.

No. 25. Let the bags be all placed at the head of one of the classes. We will call this class No. 1 ; the other, class No. 2. The first player in class No. 1 throws a bag to the first player in class No 2, who throws it back to the second player in class No. 1, who throws it back to the second player in class No. 2, who in turn, throws it to the third player in class No. 1, and so on, working it down to the foot of the class.

But one bag is not allowed to make the trip alone ; all follow, one after another, in rapid succession.

In this game, the bags are all thrown from the chest with both hands, as represented some pages back, in No. 1 of the bag exercises

No. 26. The whole company may now be divided into trios, each trio playing with three bags, as represented in *Fig.* 18. Each one throws the bag to the player at his right hand, and at the same time catches the bag thrown from the player at his left.

To secure the proper distance between the players for this game, they should take each other by the hands, and pulling hard, they will have the right position. Each player must look constantly at the one from whom he receives the bags, and never for a moment at the one to whom he throws. If they forget this rule, the bags will soon fall to the floor.

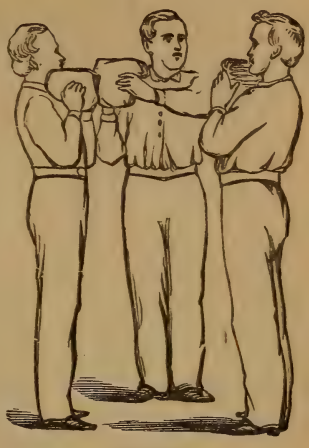


Figure 18.

No. 27. Same as the last, except the bags are passed the opposite way.

No. 28. The company is again divided into couples, and each couple plays with two, three, four, or more bags. A throws a bag with his right hand to B, who catches it with his left hand, and immediately changing it to his right, throws it back to A, who catches it with his left, and who, changing it to his right, throws it back again to B (*Fig.* 19). Two, three, four, or five bags can be made to perform this circle between two players at the same time.

Figure. 19.

The bags, in this as in all the other bag exercises, except one, should be thrown, and not tossed.

No. 29. Same as the last, except the bags are thrown with the left, and caught with the right hand.

No. 30. Now the players will stand in two classes again, the classes to be six feet apart, and the players in each party to be six feet from each other. Place six bags on a chair at the head of each class. Upon the word *one*, *two*, THREE! the first player in each class seizes a bag and runs with it to the second player, who carries it to the third, who in turn rushes to the fourth, and so on to the foot of the class. But one bag is not allowed to make the journey alone. One at a time, the

whole six are hurried onward. Instantly, and without any signal, they are sent back to the head of the class in the same order. . The class which has its six bags on the chair at the head of the class first, counts one in the game.

Exercises with Rings.

This series of exercises is entirely new, and beyond all comparison, the best ever devised. Physiologists and gymnasts have everywhere bestowed upon it the most unqualified commendation. Indeed it is difficult to conceive any other possible series so complete in a physiological point of view, and so happily adapted to family, school, and general use.

If a man were as strong as Sampson, he would find in the use of

Figure 1.

Figure 2.

these rings, with another man of equal strength, the fullest opportunity to exert his utmost strength; while the frailest child, engaged with one of equal strength, would never be injured.

There is not a muscle in the entire body which may not be brought into direct play through the medium of the rings. And if one particular muscle, or set of muscles is especially deficient or weak, the exercises may be concentrated upon that muscle or set of muscles.

Wherever these rings are introduced, they will obtain the highest favor and awaken the most earnest enthusiasm.

The ring is generally turned from cherry wood, and when finished measures six inches in diameter, while the body is one inch thick. It should be highly polished, especially on the inner part. *Fig.* 1. gives a good idea of the ring.

No. 1. Standing in the position represented in *Fig.* 2, the end of the right toe against the right toe of your partner, the toes meeting on

a straight line drawn through the entire hall, on which all the players stand, and placing the left foot at right angles with the right foot, as seen in the figure, pull hard and twist the right arm hard from right to left and left to right ten times, keeping time to the music.

Be careful in this, as in all other exercises with the ring, to draw the shoulders well back and keep the head erect.

No. 2. Same as the last, but using the left hand, with the left foot forward.

Figure 3.

Figure 4.

No. 3. Join both hands with two rings, and place the right toe against your partner's right toe, as in No. 1, being sure to keep the foot which is behind at right angles with the one in front (which I

Figure 5.

Figure 6.

may say here, is to be looked after with much care through this whole series, whenever it is possible), then pull hard, ten times, and twist the arms, keeping time to the music.

No. 4. Exactly the same as the last, but with the left foot forward.

No. 5. Without letting go the rings, turn back to back, place the

outside of your left foot against the same of your partner, in the same way you would push against the wall of the room, and pulling hard in the position represented in *Fig.* 3, twist hard ten times, keeping time to the music.

No. 6. Same as the last, but with the right foot behind.

No. 7. Turn face to face, raise the hands as high as you can over the head, and, standing about two feet and a half apart, bring the rings down to the floor without bending the knees, as represented in *Fig.* 4, ten times, and all the following exercises ten times. In the performance of this you must not bend the elbows, which you can avoid doing

Figure 7.

Figure 8.

by carrying the rings outward at each side. (In the ring exercises, when your pupils, standing their faces toward each other, turn their backs, see that they do not let go the rings).

No. 8. Standing as in the last exercise, but only two feet apart, place the rings in the position seen in *Fig.* 5. Now as the arms on one side rise, the arms on the other side fall, keeping time to the music. Be careful not to bend the arms at the elbows, which of course can be prevented in this as in many other exercises, by carrying the hands outward at the side. In this exercise a great deal of force should be used, so that when the ring is carried up on one side, it goes far beyond the perpendicular line, the bodies of the players bending freely.

No. 9. Same as the last, except the two rings go up and down simultaneously.

No. 10. Standing as in the last two exercises, the hands hanging down as low as may be, and keeping them in the same relation to each other, swing them from side to side as far as you can.

No. 11. Same as the last, except that instead of swinging the hands from side to side, they make a complete circle, being carried over the head, as well as down between the bodies of the players.

No. 12. Same as the last, except the circle is made the opposite way.

No. 13. Back to back, as seen in *Fig.* 6, thrust the rings up with great force, each player keeping his two arms exactly parallel.

No. 14. From the same position seen in *Fig.* 6, thrust the rings out sidewise, as in all the other exercises, ten times.

No. 15. Same as the last, except the rings are thrust downward by the hips.

No. 16. The last three, consecutively, ten times.

No. 17. Take the position seen in *Fig.* 7; your partner the same. The inside of your left foot to the inside of his left. Draw your left hand as far back past your left side as possible, dragging your partner's right hand after it. At the same time he has done the same thing with his left. Do the same with your right hands. And so continue to alternate. Do this strongly, pushing your hand past your partner's side as far as possible, at the same time pulling his hand as far past yours as possible.

No. 18. Same as the last, except the right foot is forward. Be sure in this, as in all others, that your two feet are at right angles.

No. 19. Same as the last two, except the feet go with the hands. When you thrust your right hand forward, the right foot goes forward too. When the left hand goes forward, the left foot goes with it.

If this be well done, the feet and hands making long sweeps to the

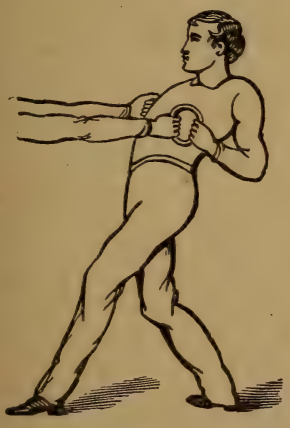


Figure 9.

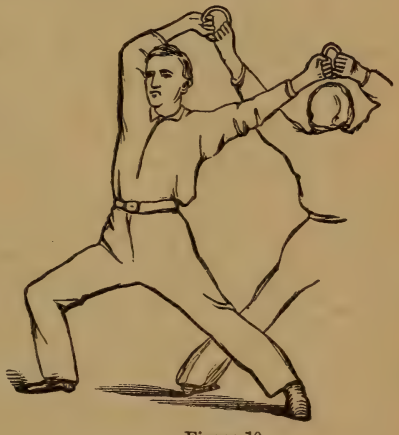


Figure 10.

music, it not only presents a fine, animated appearance to the spectators, but brings all the muscles of the body and limbs into fine play.

No. 20. Back to back, touching each other's heels. Each lunge out with the right foot in the direction the toe points, the feet being at right angles, and raise the hands over the head so they touch, thus reaching the position seen in *Fig.* 8. Now back, heels together, arms at the side, lunge out with the left feet in the same way, and thus alternate, keeping time to the music.

No. 21. Standing as represented in *Fig.* 9, your partner the same, with the inside of his left foot to the inside of your left foot, and holding the rings as shown in the figure, push them vigoruusly toward

your partner, simultaneously thrusting them past his body as far as possible. He pushes them back in the same manner, and so on.

No. 22. Same as the last, except the right foot is pushed forward, instead of the left.

No. 23. Stand back to back, heels all together; both step out sidewise in the same direction as far as you can reach, and at the same instant raise the hands on the same side as high as you can, then returning to the upright position, hands by your sides, charge out at the other side in a similar manner. When this has been done both ways, as in every other exercise, ten times; the leader cries "alternately," and you continue to change sideways as before, only in opposite directions as represented in *Fig.* 10

Figure 11.

Figure 12.

No. 24. Standing face to face, two feet apart, charge sideways as in the last exercise, and as seen in *Fig.* 11. In alternation with this, charge the opposite way. After the regular number of times, the teacher cries "alternately," and you charge out sideways with your right foot in opposite ways, as seen in *Fig.* 12; alternate with the left foot.

No. 25. Standing back to back, charge, your faces both in one direction, with bodies fronting the same, as shown in *Fig.* 13. When the teacher cries "*change!*" you must change sides with each other, still facing in the same direction. Keep time to the music with your feet, when changing sides, and as soon as you make the change, go on with the charging, using, of course, the other hands and feet.

No. 26. Joining only with your right hands, and standing apart far enough to make the arms straight and horizontal between you, charge as seen in Fig. 14; the left hand and foot the same.

No. 27. Joining with both hands, charge right and left alternately, each time, as represented in *Fig.* 14.

No. 28. Stand, each with his own heels together, as seen in *Fig.* 15, and perform the exercise exhibited in the figure. As the hands

on one side go up, the hands on the other go down. So alternate the regular number of times, when you will do the same simultaneously, the hands on both sides rising and falling together.

Figure 13.

Figure 14.

No. 29. Standing as seen in *Fig.* 16, except that the inside of the right foot should be exhibited as pressing against the inside of your partner's right foot, you draw back from each other as far as you can,

Figure 15.

Figure 16.

and then come up, touching each other's chests, all without bending the elbows.

No. 30. Same, with the left foot forward.

No. 31. Standing as seen in *Fig.* 17, draw far away from each other, keeping the arms precisely horizontal. Immediately approaching each other again, touch the shoulders as in the figure, and so continue ten times, keeping time to the music.

No. 32. Same as the last, with the feet changed.

Figure 17.

Figure 18.

No. 33. Standing face to face, raise the hands on one side as in *Fig.* 18. As these hands are brought down to the side, raise those on the other side in like manner, and so alternate ten times.

No. 34. Back to back, and raise the arms on one side as in *Fig.* 18, but carry the hands completely over the heads and down on the other side of the body. Alternate with the arms on the other side, ten times.

Figure 19.

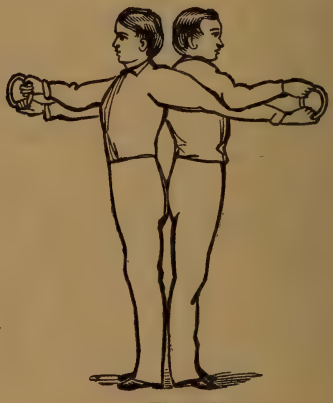


Figure 20.

No. 35. Carry the hands all over together, as seen in *Fig.* 19. Change thus from side to side, twenty times, always keeping time to the music.

No. 36. Turn face to face, and now back to back, and again face

to face, and so continue to change, alternating the sides toward which you turn.

No. 37. Perform the exercise seen in *Fig.* 20, being sure that you draw the arm of your partner directly into your axilla or armpit. After alternating twenty times, then draw the arms back and forth simultaneously, ten times.

No. 38. Join right hands with your partner with one ring, and stand apart so that your arms are straight and horizontal. Advance your right foot two feet, keeping the two feet at a right angle. Now push your chests as near together as you can, without bending your knees or elbows, as seen in *Fig.* 21. Now drawing the arms back to the horizontal on the next beat of the music, carry the hands down as low as possible without bending knees or elbows on the next beat. Now back to the horizontal, and then up as high as possible, and so continue ten times.

No. 39. Same with the left hands, the left foot being pushed forward.

Figure 21.

Figure 22.

No. 40. Join the right hands again, holding them in the horizontal position. Now push them sidewise as far as possible without bending knees or elbows. On the next beat bring the arms back to the straight line between you, and now carry them sidewise the other way, and so continue ten times.

No. 41. Left hands the same.

No. 42. Join right hands again. Instead of thrusting the hands directly upward, or sidewise, carry them obliquely upward, and after bringing them back to the straight, horizontal line, carry obliquely downward, and so continue ten times, being careful not to bend knees or elbows.

No. 43. Still use the right hands, and carry them obliquely upward the other way, and downward the other way.

Nos. 44 and 45. Same with the left hands.

No. 46. Back to back, and place the outside of the left foot against the outside of your partner's left foot. Right foot well forward. Now raise the hands over the head as seen in *Fig.* 22 (I see the artist has not placed the outsides of the left feet against each other, as he should have done), and draw away from each other, bending the knee

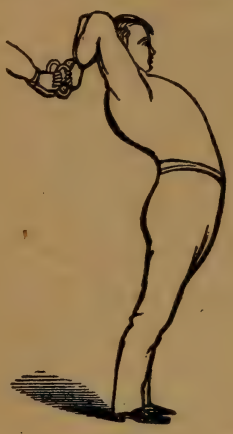


Figure 23.

Figure 24.

of the leg which is pushed forward, and thus sink down somewhat. As you come back, touch your shoulders against those of your partner, and thus repeat ten times.

No. 47. Same, with a change of feet.

In the last two exercises, as you draw away, you must not pull on the rings a single ounce. If this be forgotten, your backs may be hurt.

No. 48. Face to face, join the right hands, and place the tips of the right toes against each other, and the left feet at right angles two feet behind. Whirl the right hands, making as large a circle as possible without bending the elbows or knees. After whirling ten times one way, then whirl ten times the other way.

Figure 25.

No. 49. Same with left hands.

No. 50. Back to back, two feet apart, each with his own heels together. Raise the hands as high as possible over the head, and bring them down as seen in *Fig.* 23, five times.

No. 51. Join the right hands, and turn your right side toward your partner, keeping the right arms straight between you. Both must now step straight forward with the right foot as far as you can reach, while the right arms are kept horizontal, as seen in *Fig.* 24.

No. 52. Face the opposite way, and use the left arms and feet in the same manner.

No. 53. Stand as shown in *Fig.* 25. Pull your arms directly forward, which of course will draw your partner's arms directly backwards. Then he draws yours backwards in like manner, and so continue ten times.

No. 54. Back to back, your shoulders touching your partner. Arms perpendicular, over the head. Draw your right arm directly forward. Simultaneously with this your partner does the same thing. Now the left arms the same; and so continue to alternate, ten times. And last, draw both of your arms forward; immediately your partner does the same, and so continue to alternate, ten times.

These are not a quarter of the possible exercises with the rings; but, after a long use of them, with much study and innumerable experiments, I believe this series gives the best variety, and is sufficiently extended. Besides, this series is admirably calculated to develop those particular muscles which are almost universally deficient in the people of the United States.

Exercises with Wands.

A STRAIGHT, smooth stick, one inch in diameter and four feet long (three feet for children), with round ends, is known in this gymnasium as a "Wand," and is highly prized. It is used to cultivate flexibility, and is equally useful to persons of all ages and degrees of strength.

As a stiff, inflexible condition of the ligaments and muscles connected with the shoulders is the principal obstacle in the way of beginners, and as the wand is the best known means to remove this stiffness, it should be made prominent during the first few weeks or months of training.

It is perhaps unnecessary to say that the symmetrical development of the upper half of the body turns entirely upon the freedom with which one can use the shoulder joint. This is sufficiently obvious when we reflect that exercise of the body above the waist depends upon the arms, and of course upon the degree of freedom with which we can use the arms.

While it cannot be denied that certain muscles about the shoulders and chest may be developed to any degree, and the shoulders remain drooping and stiff, it is quite as undeniable that general and symmetrical development of that part of the body (which is almost universally distorted and deficient among Americans), can be achieved only by complete liberty about the shoulder joint, through which as a fulcrum or centre, all considerable training of the upper part of the body is derived.

I had pursued the study of Gymnastic Culture but a short time, before I saw the great importance of the wand, in a system of training adapted to the American people.

I have invented a very extended series of these exercises, some of which are here described and illustrated.

No. 1. Divide the wand into three equal parts with the hands, and hold it as represented in *Fig.* 1. Thrust it downward close by the legs with much force, and again bring it up by the chin, holding the elbows high, as seen in the figure, and so continue twenty times.

Figure 1.

Figure 2.

No. 2. From the position seen in *Fig.* 1, carry the wand directly upward as high as you can reach, and back to the chin, ten times.

No. 3. From the highest position of No. 2, bring the wand down to the knees and back again, twenty times, *without bending the elbows.*

Figure 3.

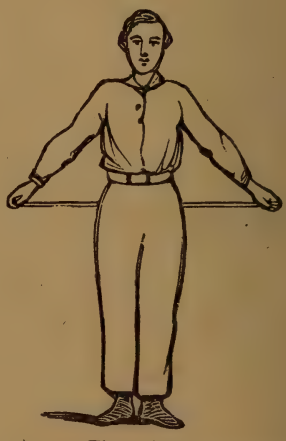


Figure 4.

No. 4. Holding the wand high over the head, bring it down on the back of the neck, ten times, as seen in *Fig.* 2.

No. 5. Same as the last, except every second time the wand is

brought down to the chin, being careful that every time that the wand is carried upward, it is carried as high as possible, and with much force.

No. 6. Hands over the head, but this time at the ends of the wand, as seen in *Fig.* 3, and now bring it down behind as seen in *Fig.* 4, twenty times, *being very careful not to bend the elbows.*

No. 7. Same as last, except that every second time the wand is brought down to the knees in front.

No. 8. Hold the wand directly overhead, hands grasping the ends, and carry it from side to side (*Fig.* 5), being very careful not to bend the elbows, and yet the wand must come to the perpendicular on either side.

Figure 5.

No. 9. Hold the wand directly in front, and perpendicular, with the hands in the middle of it, six inches apart, and the arms as nearly horizontal as possible. Keeping the arms stiff, whirl the wand from side to side as far as you can.

No. 10. Standing erect, heels together, put the wand out with your right hand midway between two lines, one of which runs directly forward, and the other at right angles with this, at your side; which direction we shall call diagonally forward. Let the wand rest on the floor, at a point removed as far from your feet as possible, keeping

Figure 6.

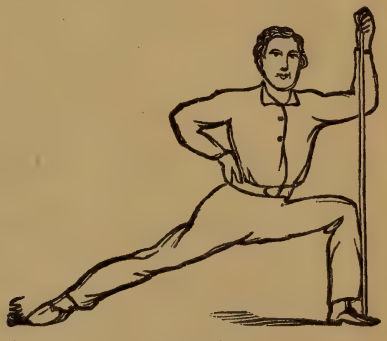


Figure 7.

your body and the wand perpendicular, and the arm horizontal. The elbow must not be bent. Step out as seen in *Fig.* 6, the foot passing behind the wand, as seen in the figure. In doing this you must not bend the elbow, nor must you move the wand. It will be seen that the shoulders scarcely move, the motion being confined to the legs and lower part of the body. Charge thus ten times.

No. 11. Same as the last, but with left hand and foot.

No. 12. Stand erect. Carry the wand out with the left hand diagonally forward, as far as you can reach. Step out to the wand

with the left foot. Let the foot remain there. Now the body is to rise and fall as far as possible. (*Fig.* 7). Don't bend the knee of the right leg. Keep the shoulders and head well back.

No. 13. Same as the last, on the right side.

No. 14. Stand as seen in *Fig.* 8. Thrust the arms straight forward, and back again to the chest, ten times, keeping the wand all the time perpendicular.

No. 15. At the conclusion of the last exercise, when the arms are thrust forward, bring the wand into the position seen in *Fig.* 9. Then carry it right back to the position seen in front, with the arms straight and horizontal. Now bring it down on the left side, and so continue ten times to each side.

No. 16. In concluding the last, when the arms are extended in

Figure 8.

Figure 9.

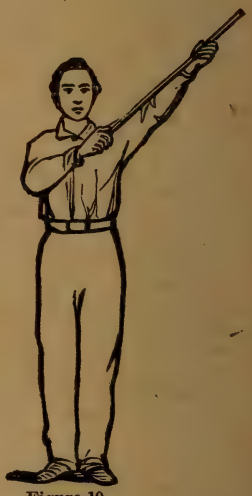


Figure 10.

front, bring the hands and wand to the position seen in *Fig.* 8. Carry it diagonally forward and upward on the left side, as seen in *Fig.* 10. Bring it back to the chest again, and thrust it out on the right side. Alternate twenty times.

No. 17. As you thrust out the wand on the right side, step out the foot in the same direction. Be sure it is neither forward nor at the side, but diagonally forward. (*Fig.* 11). Alternate between the right and left side twenty times.

No. 18. Same as the last, except that the wand goes to the right as the left foot charges to the left, and the left arm and wand to the left, while the right foot charges to the right.

No. 19. Same as the last, except when the right foot charges diagonally forward, the wand is made to point diagonally backwards over the left shoulder, and vice versa.

No. 20. Same as the last, except when the right foot charges

diagonally forward, the wand is made to point diagonally backward over the right shoulder, and when the left foot charges diagonally forward, the wand is made to point diagonally backward, over the left shoulder.

No. 21. Same as the last, except the feet charge diagonally backward. As the left foot charges thus, the wand is made to point diagonally forward, on the right side, and vice versa. (*Fig.* 12).

No. 22. Same as the last, except when the left foot charges diagonally backward, the wand is made to point diagonally forward on the left side, and when the right foot charges diagonally backward, the wand points diagonally forward, on the right side.

No. 23. Same as the last, except when the left foot charges diagonally backward, the wand points diagonally backward on the same

Figure 11.

Figure 12.

side. And when the right foot charges diagonally backward, the wand points diagonally backward, on the same side.

No. 24. Same as the last, except when the left foot charges diagonally backward, on its own side, the wand points diagonally backward on the right side, and vice versa.

It must not be forgotten that in all these compound exercises, involving the action of the arms and legs, the wand is always held at an angle of forty-five degrees above the horizontal; and that in every case in passing from one charge to another, the wand is brought to the position represented in *Fig.* 8. Without this it would be impossible to keep time to the music. Let the steps be as long as possible.

No. 25. Wand horizontal over the head, as seen in *Fig.* 3. As in almost all the wand exercises, be careful not to bend the elbows. Turn the wand round so that the right hand comes exactly in front, and the left hand exactly behind. Bring the left in front and the right behind; so change twenty times.

No. 26. Hold the wand horizontal over the head, with the right

hand in front and the left one behind. Make, by the side of the body, the motion seen in paddling a canoe. Each time carry the wand so far back that it shall be perpendicular. Do this ten times on the right side; then ten times on the left; then alternately ten times. Each time, as the wand is brought over the head, it must be made horizontal, with one hand exactly in front, and the other behind, and as it is brought behind the body, it must be made perpendicular.

No. 27. Charge diagonally forward with the right foot; wand in the same direction. Left foot diagonally forward; wand the same. Left foot diagonally backward; wand the same. Right foot diagonally backward; wand the same. Having thus gone all around, begin again with the left foot and go round the other way in like manner.

Figure 13.

No. 28. With both hands take hold at the end of the wand. Hold it horizontal in front. Carry it directly backward without bending the arms, as seen in *Fig.* 13. (I see the artist has tipped the figure so far that the centre of gravity is lost).

No. 29. Heels together. Wand directly in front, resting on the floor, and perpendicular. Arm straight. Step the right foot forward to the wand, and back to the other foot, five times. Left foot the same.

No. 30. Step the right foot backward as far as you can reach (*Fig.* 14), and bring it back to the other foot, ten times. Same with the left foot.

No. 31. Carry the right foot forward to the wand. Returning, do

Figure 14.

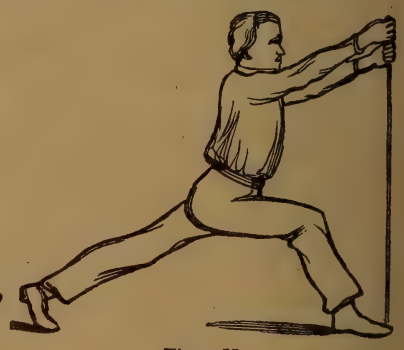


Figure 15.

not stop by the other foot, but carry it backward as far as you can reach. Now forward to the wand again. Make this long sweep ten times. Left foot the same.

No. 32. Seizing the upper end of the wand with both hands, as seen in *Fig.* 15, carry the right foot forward to the wand, and the left

foot back as far as you can reach. Change them at a single jump, and so continue ten times.

No. 33. Hold the wand in the position seen in *Fig.* 9, on the right side, with the right hand at the lower end, and the left hand at the upper. Change it to the left side, with the left hand at the lower end, and the right hand at the upper; so change from side to side, ten times.

No. 34. Begin the same as in the last, except the wand is held on the back of the right shoulder instead of the front. Carry it now to the back of the left, and so alternate ten times.

No. 35. Beginning at the front of the right shoulder, as in No. 32, carry it to the front of the left shoulder. Then to the back of the left shoulder, and now to the back of the right shoulder. Go thus around the body five times.

No. 36. Begin at the front of the left shoulder, and go around the body the other way five times.

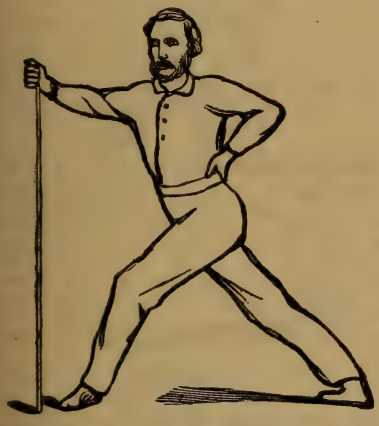


Figure 16.

Figure 17.

No. 37. Hold the wand on the front of the right shoulder. Carry it to the back of the left shoulder. Back again to the front of the right shoulder. Repeat ten times.

No. 38. Begin at the front of the left shoulder, and alternate with the back of the right shoulder.

No. 39. Again putting the wand in front, on the floor, perpendicular, with the right hand seizing the upper extremity, and the arm straight, step the right foot forward to the wand. Bring it back to the other foot. Now step sideways to the right as far as you can reach. Bring it back to the other foot again; now step backward as far as you can reach. Bring it back to the other foot. Still using the right foot, step sideways to the left as far as you can reach, passing it by the left leg behind (*Fig* 16), now back to the other foot again. Pass it to the left again, in front of the left leg (*Fig.* 17), and bring it back to the other foot. Continue this round five times.

No. 40. Same with the left arm and leg, five times. In all this the wand must not lose its perpendicularity.

No. 41. Stand upright, with the the heels together, seize the wand at its middle, with the right hand, and hold the arm horizontal in front — wand perpendicular. Keeping the arm in the horizontal place, whirl it round the body, making a complete circle, but do not stir the feet. Same with the left hand, ten times.

No. 42. Grasp the middle of the wand with both hands, and whirl as in the last, as far as you can, ten times.

No. 43. Same as the last, except the wand is held horizontal, instead of perpendicular.

No. 44. Seizing the wand as seen in *Fig.* 18, step backward and forward over it with the right and left foot, ten times.

Figure 18.

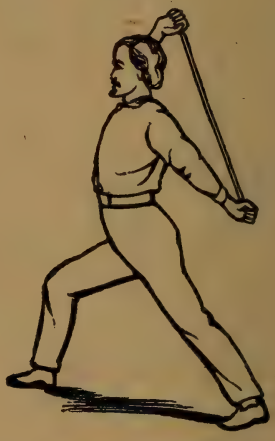


Figure 19.

No. 45. Stand upright, heels together, grasp the wand at the extreme ends and hold it behind the body, keeping the arms straight. The right hand high up, and the left hand low down. Now swing the left hand high up, and the right low down, and so continue to change the relative positions of the end of the wand, without bending the elbow, ten times.

No. 46. Charge the right foot diagonally forward, as seen in *Fig.* 19, five times. Now the left foot with the left hand raised high, five times. Alternate five times.

No. 47. Same as the last, except that when charging with the right foot, you raise the left hand high, and vice versa.

The wand exercises from this point are performed in couples, and while marching.

No. 48. Marching as represented in *Fig.* 20, leap sideways as far as possible, first one foot, and then the other, without losing your relation to each other.

No. 49. Putting the two wands together, and holding them as represented in *Fig.* 21, leap sideways as before, being sure to keep the

shoulders back, and so leaping together, that the two will move as one person. Be sure to keep the arms quite perpendicular over the shoulders.

Figure 20.

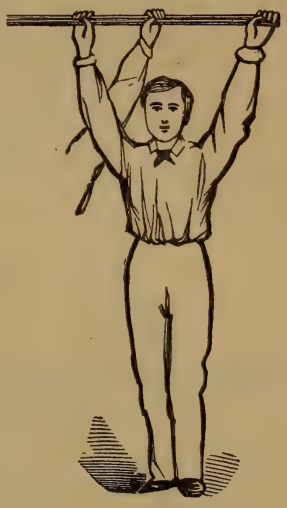


Figure 21.

No. 50. One person walking directly behind the other, take hold of the extreme ends of the wands, and then allow the hands to rest on the shoulders. Marching in this way, at the word of command, " Up,"

Figure 22.

Figure 23.

raise the wands as high as you can, and as the right foot goes forward thrust the right hand as far forward as possible, the left one at the same time being pushed as far back as possible (*Fig.* 22), and as the left foot comes forward, reverse the hands.

No. 51. Same as the last, except the right hand goes forward with the left foot, and the left hand with the right foot. In all these you must not bend the elbows, except when you are told to bend them.

No. 52. Still keeping your arms perpendicular, carry both of your hands forward as far as you can reach with your right foot, and as you step your left foot forward, carry both hands as far back as you can reach, and thus continue for ten steps.

No. 53. Same as the last, except that the hands go forward with the left foot, and backward when the right foot goes forward.

Figure 24.

Figure 25.

No. 54. Bring the hands to the shoulders, and as the right foot steps forward, raise the right hands as high as you can reach. When the left foot goes forward raise the left hands, and bring down the right hands, and so continue to alternate ten times.

No. 55. Same as the last, except the right hands go up as the left feet go forward, and the left hands with the right feet.

No. 56. The two hands go up simultaneously with the stepping forward of the right feet, and come down as the left feet go forward.

No. 57. Same as the last, except the hands go up as the left feet go forward, and down as the right feet go forward. Be sure in the last four exercises that the arms go up and down quite vertically.

No. 58. Put the two wands together, and take hold of them with one hand, as represented in *Fig.* 23, and marching side by side, leap sideways right and left, keeping the wand as high as you can reach.

No. 59. Partners change sides and repeat the same.

No. 60. Carrying the wand as in *Fig.* 23, as you step forward with the right foot, bring the wand down so as to strike your right leg with the hand, and then as your left foot goes forward, carry the wand back to its vertical position, and so continue ten times.

No. 61. Change sides with your partner, and do the same again, only bringing your wand down as the left foot goes forward, and raising it as the right foot goes forward.

No. 62. Cross the hands on the two wands placed side by side, but instead of holding them over the head, as in *Fig.* 21, let them hang down in front, and carrying them thus, leap from side to side.

No. 63. Walking one in front of the other, and extending the arms horizontally, *being careful not to bend the elbows*, carry the right forward as far as possible with the right foot, as represented in *Fig.* 24, and simultaneously with this, carry the left foot backward as far as possible. When the left foot comes forward, let the left hand come forward too, and thus alternate.

No. 64. Same as the last, except that the right hand comes forward with the left foot, and vice versa.

No. 65. The same, simultaneously with the right foot and with the left foot.

Be careful in the performance of the last four, that you keep the arms exactly horizontal from first to last.

No. 66. Walking one in front of the other, with the wands hanging in the hands on either side, carry one up as high as you can reach, as in *Fig.* 25, and then as the other foot goes forward, carry up the other while the first is brought down.

No. 67. Same as last, except the right arms goes up as the left foot goes forward, and vice versa.

No. 68. Simultaneously up, with the right foot forward, ten times, and the same with the left foot.

It is perhaps unnecessary to repeat that every motion with the wands is to be done to music. In making the changes from one exercise to another, this rule must not be forgotten.

It must not be forgotten that the feet, in every exercise, are to be kept at right angles with each other.

Gymnastic Crown.

Bearing burthens on the head results in an erect spine and an elastic gait. Observing persons who have visited Switzerland, Italy, or the Gulf States, have observed a thousand verifications of this physiological law.

Cognizant of the value of this feature of gymnastic training, I have employed, for this purpose, within the last twelve years, various sorts of weights, but have recently invented an iron crown, which I think completely satisfactory. The accompanying cut gives a good idea of its general form. I have them made to weigh from three to one hundred pounds. The crown is so padded within, it rests pleasantly on the entire top of the head, and yet so arranged that it requires skill to balance it. It is beautifully painted, and otherwise ornamented.

The following suggestions are important in wearing the crown: Wear it five to fifteen minutes, morning and evening Hold the body erect, hips and shoulders thrown far back, and the crown rather on the front of the head, as shown in the cut.

Walking up and down stairs while wearing the crown is good, if the lower extremities are not too much fatigued by it. When walking through the hall or parlors, turn the toes, first, inward as far as possible; second, outward; third, walk on the tips of the toes; fourth, on the heels; fifth on the right heel and left toe; sixth, on the left heel and right toe; seventh, walk without bending the knees; eighth, bend the knees, so that you are nearly sitting on the heels while walking; ninth, walk with the right leg bent at the knee, rising at each step on the straight left leg; tenth, walk with the left leg bent, rising at each step on the straight right leg.

With these ten different modes of walking, the various muscles of the back will receive the most invigorating exercise.

All persons, of both sexes and of every age, who have round shoulders or weak backs, are rapidly improved by the use of the gymnastic crown.

The Pangymnastikon.

The Germanic nationality has been redeemed from political and social degredation by gymnastics. I could mention a score of eminent German writers and patriots who freely admit that the physical invigoration of the German people, through the universal practice of gymnastics, was the foundation of the subsequent moral revolution. The soul is so interwoven with and dependent upon the body, that when the body is sick the soul must suffer with it. If the foundation give way, the superstruction must soon fall; and while the existence of a good foundation does not necessitate a superstruction, the latter cannot exist without the former.

Gluttony, drunkenness, licentiousness, and other vices so undermined the German constitution, that adventurers and tyrants found Germany an easy prey. Gutsmuth, Jahn, Eiselen, Opiess, and their fellow-workers turned back the tide of physical degeneration and death. Inspired with the noblest patriotic instincts, they gave their lives to the introduction of gymnastics as an integral part of the na-

tional education. They clearly saw in a physical redemption, the foundation of a political redemption. The great German heart turns to-day toward these great gymnastic reformers as the salvation of their noble nationality.

It may be justly claimed that among all the great and good patriots who have devoted themselves to this momentous task, the great Schreber of Leipsic was the most eminent. He was a voluminous author, and the most remarkable of his productions was the *Pangymnastikon*. He was in the habit of speaking of this invention and the book describing it as the most important of his contributions to the cause of physical culture.

That work I have translated, and reproduced the 108 cuts complete. The entire work with the cuts is published in my work known as the "New Gymnastics," published by Ticknor & Fields, Boston.

I will here say, that whoever desires to put up, for home use, a Pangymnastikon, after Schreber's design (and without doubt it is the best means for home training ever devised), can obtain detailed descriptions of this apparatus, by sending a request to that effect to Dr. Dio Lewis, Box 12, Boston, with a stamp to pay the return postage. With a complete illustrative cut, and full descriptions in text, there will be no difficulty in understanding the invention.

School-Desks and Seats.

A RADICAL change in school furniture is needed. The seats and desks now used compel an attitude which results in a stooping form.

Figure 1.

Figure 2.

The other day I stood an hour in the street and saw more than five hundred persons pass, not one of which was erect. Bending over the

desks in our schools would make us crooked if we were made of spring-steel. The desk tops should be so arranged that it can be raised nearly to the perpendicular before the face of the pupil, and the book held in such a position which compels him to sit with head and shoulders well drawn back.

Fig. 1 exhibits a fruitful source of stooping shoulders.

Fig. 2 shows a better desk and the improved position of the pupil.

Fig. 3 is a model desk. The top can be raised to any desired

Figure 3.

Figure 4.

height, or let down to nearly the horizontal for writing exercises. On the desk top will be seen a bar which supports the book. This can be moved at pleasure and has a pair of fingers which will hold the book in any position.

Fig. 4 shows two support-bars, an arrangement which must prove most convenient to students of the languages, and to those who have occasion to consult a dictionary while reading. The seat is easily adjusted to any desired height.

The new Book-holder, patented Dec. 9, 1862, is destined to play an important part in the prevention of the round-shoulder deformity, and its certainty to produce erect forms will be seen upon an examination of the cut. It may be used upon the ordinary desk, and is made to hold one, two or three books in a much better position than by the desk. It is exceedingly light and pretty. The inclination can easily be altered by raising the hook attached to the strap. The fingers, imperfectly shown, keep the book open, and thus dispenses with the use of the hands. There is no chance in its use to sit stooping without bringing the face in direct contact with the book. When we remember how many years children are engaged over their books, the great importance of this invention will be appreciated. It is cheap, and not liable to get out of order. Those wishing to procure such a holder can send to Dr. Warren, Boston.

History of Gymnastics in the United States.

I do not purpose a general history of the Physical Culture Movement in this country. I shall speak of only one feature. I refer to the efforts to introduce physical education into young ladies' seminaries. A consciousness of its need was deeply felt. Thoughtful educators know that education meant a preparation for the duties of life; and they saw the graduates of these institutions, pass from the school into hopeless invalidism, not in rare instances, but as a rule. As the phrase goes, their "*education* was finished," but *they too* were finished. Their spines were unable to support their learned heads.

Anxious fathers and mothers besought school managers to give their daughters' bodies a chance for life. Willing to respond, they announced, "Physical culture receives, in our institution, careful attention," etc. Generally they had no conception of what was *meant* by physical culture, and of course accomplished nothing. The girls under their charge who needed two or three hours of daily unrestrained, romping, laughing, and vigorous muscle training, were made to walk in solemn procession through the school grounds under a picket guard of maiden ladies, on proper days, and once or twice a week they were conducted through a series of dull calisthenic arm-motions, under corsets and long dresses. No wonder they "got through" with pale faces, drooping shoulders, and ruined health.

I hazzard nothing in saying that the physical training given in ninety-nine hundredths of the female seminaries in the country has no value. How much benefit would be derived from musical training in these same schools if they employed a person who had no comprehension of harmony; or of mathematics, who had never learned the multiplication table; or of reading and spelling, who did not know the alphabet? Physical education must be placed on the same basis as moral and intellectual training, and competent teachers employed; otherwise it will as certainly fail as would the efforts to introduce pianno music, without a teacher who knew how the touch the keys so as to bring forth harmonious sounds.

Parents and teachers are beginning to understand this. Patrons of schools now loudly demand that a three years course they give their daughters shall improve, shall educate, instead of spoil their bodies. A true change has begun. The graduates of the Normal Institute for Physical Education are in eager demand.

Only two years ago, the principal of one of the most celebrated ladies' seminaries in the country wrote me a letter, of which the following is an extract: "I wish you would indicate the day on which you can give me an hour or two with the least inconvenience to yourself. I am determined to introduce your entire system, and as I know nothing of it, you must give me a good lesson." He thought it was a science which could be learned in two hours. Two years have passed away, and the same institution employs a lady teacher, thor-

oughly trained, from my school, at an expense of $650 per year. Under her management all the young ladies of the institution devote more than an hour daily to thorough bodily training. What is now wanted is ten thousand teachers. Young men and women can enter no profession more favorable, useful, and profitable. Those who would prepare for this important work, should come to Boston, either on the second of January or the fifth of July, and enter the Normal Institute from which they can, with average capacity, graduate in ten weeks, prepared to enter a noble and remunerative profession.

I cannot close this brief consideration of the history of our efforts to introduce gymnastics into ladies' seminaries, without alluding to one or two successful attempts.

Rev. George Gannett, Pemberton Square, Boston, has a first-class seminary for young ladies. He has recently added a large hall to his already extensive establishment, with almost sole reference to physical training; and he is pushing the work with commendable zeal. During more than two years I have had charge of this important department in Mr. Gannett's institution, and can say that his earnestness is constantly increasing.

The Maplewood Institute at Pittsfield, Mass., under the charge of Rev. Mr. Spear, is carrying on the same work with energy.

The fine private school located at West Newton, Mass., under the management of N. T. Allen, Esq., is thoroughly alive in this vital department. During more than two years I have had supervision of physical education in Mr. Allen's school.

Graduates of the Normal School for physical education are engaged in many of the first young ladies' seminary in the country. The friends of a true education have occasion to rejoice and take courage.

PRESCRIPTIONS.—RECIPES.

THESE prescriptions are numbered, and referred to by corresponding numbers in the treatment of the various diseases. This arrangement saves the trouble of writing out each prescription every time it is wanted under the several disorders. When there are several recipes, each of which is suitable in a certain stage of a complaint, this plan affords the means of referring to them all in a little space, by simply giving their numbers. The doses named are always for *grown persons*, unless it is otherwise stated.

Great pains have been taken in preparing these prescriptions. A considerable portion of them are the favorite recipes of the most distinguished physicians, the world over.

The classification of these recipes under separate heads, is necessarily very imperfect, and has been attempted only to make it more easy for me to refer to them while writing the book. The classification could only be applied to a part of them, however; the rest are indiscriminately mixed.

Pukes. Emetics.

1. *Pulverized Ipecac*, 1 scruple; pulverized cayenne, 10 grains; water, 2 ounces. Mix. To be taken at a draught.

2. *Pulverized Lobelia*, 1 oz.; pulv. blood root, ½ oz.; pulv. seneka, 1 scruple; pulv. ipecac, 6 drams; pulv. cayenne, 4 scruples. Mix. An excellent emetic in all cases where one is required. *Dose.* — One-half teaspoonful in warm water, and repeat every fifteen minutes three or four times.

3. *Wine of Antimony*, 1 dram; wine of ipecac, 1 oz. Mix.

4. *Tartar Emetic*, 1 grain; pulverized ipecac, 1 scruple. Mix. To be taken in a wine-glassful of sweetened water.

Purges. Cathartics.

5. *Precipitated Sulphur*, 15 grains; magnesia, 1 scruple. Mix. To be taken each night at bedtime, for costiveness and bleeding piles.

6. *Confection of Senna*, 2 ozs.; cream of tartar, 1 oz.; sulphur, 1 oz.; syrup of ginger enough to make a stiff paste. Mix. A piece as large as a nutmeg is to be taken as often as necessary to keep the bowels open. One of the very best remedies for piles.

7. *Rochelle Salts*, 2 drams; bi-carbonate of soda, 2 scruples; water, ½ pint. Mix. To this mixture add 35 grains of tartaric acid, and take the whole foaming. This is the recipe for Seidlitz powders.

8. *Calcined Magnesia*, 1 dram; water, 2 ozs. Mix. To be taken at a draught.

9. *Sulphate of Magnesia*, (epsom salts), 2 drams; freshly roasted coffee in coarse powder, 2 scruples; hot water, 4 ozs. Mix and boil for three minutes, and strain. This may be sweetened, and taken every morning for habitual costiveness, or repeated once in three hours, if an immediate effect is desired.

10. *Castor Oil*, 1 oz.; the yolk of one egg; put together, and add, simple syrup, ½ oz.; peppermint water, 2 ozs. Mix. To be taken at a draught, after being well stirred or shaken.

11. *Sulphur*, 1 dram; cream of tartar, 2 drams. Mix. To be taken in syrup or molasses.

12. *Rhubarb*, 10 grains; calcined magnesia, ½ dram. Mix. To be taken in syrup or molasses.

13. *Powdered Senna*, ½ dram; powdered jalap, 10 grains; powdered cloves, 10 grains; Mix. To be taken in sweetened water.

14. *Powdered Jalap*, 10 grains; cream of tartar, 2 drams. Mix. To be taken in syrup or molasses.

15. *Fluid Extract of Senna and Jalap*, 2 drams; infusion of cloves, 2 ozs. Mix. To be taken at a draught.

16. *Castor Oil*, 1 dessert spoonful; oil of turpentine, 1 dessert spoonful. Mix.

17. *Castor Oil*, 1 dessert spoonful; magnesia, 1 dessert spoonful. Rub together into a paste. By this combination, the taste of the oil is almost entirely concealed, and children will take it without opposition.

18. *Sulphate of Magnesia*, 1 oz.; cream of tartar, 1 oz.; pure water, 1 pint. Mix. A wine-glassful occasionally.

19. *Compound Extract of Colocynth*, ½ dram; blue pill, 8 grains. Mix, and divide into 8 pills.

20. *Epsom Salts*, 2 ozs.; tartar emetic, 1 grain; spearmint water, 1 pint. Mix.

21. *Senna*, 3 drams; salts, ½ dram; manna, ½ dram; fennel seed, 1 dram; boiling water, ½ pint. Macerate for one hour in a covered vessel, and strain. Take a teacupful once in four hours, till it operates.

22. *Aloes*, 2 scruples; carbonate of potassa, 15 grains; decoction of barley, ½ pint. Mix, and rub together.

23. *Sulphur*, 1 teaspoonful; cream of tartar, 10 grains; saltpetre, 5 grains. Mix. To be taken at a dose.

24. *Manna*, 2 drams; fennel water, 1 oz. Mix. One dessert spoonful, as a cathartic for an infant.

25. *Compound Infusion of Senna*, 4 ozs.; caraway water, 2 ozs.; tartrate of potassa, 2 drams; manna, 1 dram. Mix. A tablespoonful for a child, to relieve costiveness.

26. *Calcined Magnesia*, 1 scruple; pulverized rhubarb, 1 scruple; pulverized ipecac, 1 grain. Mix. Give one-fourth of this daily.

27. *Epsom Salts*, 2 drams; dissolve in pure water, 1 oz. Then add sweet spirits of nitre, 2 drams; laudanum, 10 drops. *Dose.* — A teaspoonful, to be repeated according to circumstances.

28. *Pulverized Rhubarb*, 1 scruple; leptandrin, 10 grs.; calcined magnesia, 2 scruples; pulverized cinnamon, 10 grains. Mix. Three or four grains every third hour, to a child of six months.

29. *Compound Extract of Colocynth*, ½ dram; extract of jalap, 15 grains. Mix. Make 12 pills. Two or three pills will produce active operation of the bowels.

30. *Pulverized Senna*, 2 drams; bicarbonate of potassa, 2 ozs.; pulverized cayenne, 10 grains; pulverized jalap, 1 dram. Mix. Divide into 12 parts. One part for an adult every four hours till it operates.

31. *Pulverized Gamboge*, 12 grs.; pulv. scammony, 12 grs.; elaterium, 2 grs.; croton oil, 8 drops; ext. of stramonium, 3 grs. Mix. Make 12 pills. One pill is a dose, repeated every hour until it operates.

32. *Pulverized Scammony*, 12 grs.; pulv. gamboge, 12 grs.; pulv. colocynth, 8 grs.; castile soap, 4 grs.; oil of anise, 5 drops. Mix. Make 12 pills. One pill, repeated every three hours till it operates.

33. *Pulverized Scammony*, 6 grs.; croton oil, 4 drops; pulv. loaf sugar, 16 teaspoonfuls. Rub well together in a mortar. Give one teaspoonful every hour or two, to a child 7 years old, till it operates.

34. *Leptandrin*, 1 dram; podophyllin, 1 scruple; scutillarine, 2 drams; pulv. cayenne, 1 scruple; pulv. loaf sugar, 4 ozs. Rub together for some time in a mortar. Dose for an adult, $\frac{1}{16}$ of the above.

35. *Pulverized Rhubarb*, 2 scruples; bicarbonate of potassa, 1 scruple; ext. of nux vomica, 5 grs. Mix. Make 20 pills. One pill twice a day.

36. *Leptandrin*, 1 dram; podophyllin, 1 scruple; apocynin, 1 scruple; ext. nux vomica, 6 grs.; castile soap, 1 dram. Make 30 pills. One pill every night.

37. *Sweet Tinct. of Rhubarb*, 4 ozs.; bicarbonate of soda, 2 drams. Mix. From a teaspoonful to a tablespoonful, as occasion may require.

38. *Pulverized Rhubarb*, 2 ozs.; bicarbonate of potassa, 1 oz. Mix. Of this take enough to produce one movement of the bowels per day.

39. *Leptandrin*, 30 grs.; podophyllin, 10 grs.; pulv. cayenne, 10 grs.; ext. nux vomica, 6 grs.; quinine, 12 grs. Mix. Make 24 pills. One, two, or three times a day.

40. *Podophyllin*, 15 grs.; leptandrin, 2 scruples; cream of tartar, 5 scruples. Mix. Divide into 10 powders. One is a dose.

41. *Comp. Powder of Jalap*, 1 oz.; cream of tartar, 1 oz. Mix. One teaspoonful is a dose, to be taken in sweetened water.

42. *Pulverized Charcoal*, 1½ drams; pulverized rhubarb, 2 scruples; pulverized ipecac, 6 grains; extract of hyoscyamus, 12 grs. Mix. Divide into 12 portions. Give one every three or four hours.

43. *Pulverized Blood-root*, 1 dram; pulv. rhubarb, 1 dram; castile soap, 2 scruples. Mix, and divide into 32 pills. Take one morning and night. Excellent for costiveness.

44. *Rochelle*, 14 drams; magnesia, 11 drams; powdered charcoal, 8 drams. Mix. *Dose.*—A heaping teaspoonful in dyspepsia and costiveness, with foul breath, etc.

45. *Pulverized Rhubarb*, 8 grs.; pulv. guaiacum, 8 grs.; galbanum, 2 grs.; pulv. ipecac, 2 grs. Mix. Make 8 pills. Take one to two pills night and morning. For a weak stomach, and a bilious condition.

Tonic and Cathartic.

46. *Podophyllin*, 4 grs.; leptandrin, 8 grs.; quinine, 8 grs.; ext. nux vomica, 2 grs. Mix. Make 16 pills. One, two, or three pills, at bed time, according to the requirements of the case.

47. *Sulphate of Iron*, 1 scruple; pulverized aloes, 2 scruples. Mix, and make into 20 pills. One pill twice a day. An excellent remedy, in chlorosis, when the bowels are confined.

48. *Carbonate of Iron*, 1 dram; pulverized rhubarb, ½ dram; pulverized aloes, ½ dram; extract of hops, ½ dram. Mix. Make 30 pills. One pill three times a day.

49. *Fluid Extract of Senna*, 1 dram; compound fluid extract of gentian, ½ dram; fluid extract of ginger, ½ dram; aromatic spirits of ammonia, ½ dram. Mix. To be taken in a wine-glassful of sweetened water.

50. *Aromatic Syrup of Rhubarb*, 1 oz.; tincture of colombo, 1 oz. Mix. *Dose.*—Two teaspoonfuls three times a day.

51. *Compound Infusion of Gentian*, 6 ozs.; epsom salts, 4 drams; diluted sulphuric acid, 16 drops. Mix. A table spoonful every six hours.

52. *Blue Pill*, 10 grs.; pulv. gum arabic, 5 grs.; magnesia, 1 dram; white sugar, 5 grs.; comp. infusion of gentian, 1½ ozs.; water, 1½ ozs.; tinct. of ginger, 1½ ozs. Mix. From a teaspoonful to a tablespoonful to be taken night and morning.

53. *Pulverized Peruvian Bark*, 1 oz.; pulv. rhubarb, ½ dram; pulv. muriate of ammonia, 1 dram. Mix. Divide into eight powders. Take one three times a day.

54. *Oxide of Zinc*, 2 drams; magnes., ½ oz.; quinine, 1 scruple. Mix. Divide into 32 powders. Take one four times a day.

55. *Aloes*, 1 oz.; gentian, 1 oz.; orange peel, 1 oz.; juniper berries, 1 oz.; aniseed, bruised, 1 oz.; gin, 1 pint. Mix. Macerate two weeks, and strain. *Dose.*—A tablespoonful. Good for bilious habits.

Carminative Physic.

56. *Manna*, 1 oz.; aniseed, bruised, 1 dram; boiling water, ½ pint. Mix. Let the mixture stand for half an hour, then strain, and add three drams of carbonate of magnesia so as to make a perfect mixture. Take a wine-glass full every two or three hours, till it operates. For the drum-head state of the bowels.

57. *Thoroughwort*, 2 ozs.; ginger and cloves, each, ½ oz.; ext. dandelion, 4 ozs.; water, 1½ pints. Boil to one-third, and add sugar, 1½ pounds, and brandy, ½ pint. An excellent cordial cathartic to act upon the liver.

Tonics.

58. *Chamomile Flowers*, ½ oz.; cold water, 1 pint. Macerate for one hour and strain. A wine-glassful to be taken several times a day.

59. *Sulphate of Quinine*, 15 grains; diluted sulphuric acid, 15 drops; compound tincture of cardam., 3 drams; tincture of hops, 3 drams; compound infusion of roses, 6 ozs. Mix. A teaspoonful two or three times a day, in chlorosis.

60. *Diluted Sulphuric Acid*, 2 drams; syrup of orange peel, 2 ozs.; cinnamon water, 1 oz. Mix. A teaspoonful or two in a wine-glass of water two or three times a day.

61. *Carbonate of Iron*, 1 dram; extract of gentian, 1 dram. Mix. Make 30 pills. One pill two or three times a day.

62. *Sulphate of Quinine*, 12 grains; aromatic sulphuric acid, 24 drops; syrup, 1 oz.; peppermint water, 1 oz. Mix. In intermittent fever, take one tablespoonful once in three hours. Ordinarily, one teaspoonful is a sufficient dose.

63. *Compound Infusion of Gentian*, 8 ozs.; nitro-muriatic acid, 30 drops. Mix. Take one tablespoonful three times a day.

64. *Bicarbonate of Soda*, ½ oz.; compound infusion of gentian, 4 ozs.; tincture of colombo, 1 oz.; syrup of orange peel, ½ oz. Mix. Take a tablespoonful three times a day.

65. *Sulphate of Quinine*, 1 scruple; alcohol, 4 ozs.; sulphuric acid, 5 drops; Madeira wine, 1 quart. Mix. Two wine-glassfuls a day.

66. *Rasped Quassia*, 2 drams; cold water, 1 pint. Macerate twelve hours, and strain.

67. *Quinine*, 1 scruple; alcohol, 4 ozs.; sulphuric acid, 5 drops. Mix. Take a teaspoonful three times a day.

68. *Arseniate of Iron*, 3 grains; extract of gentian, 2 drams; pulverized liquorice, 1 dram. Mix. Make 20 pills. Take one pill three times a day. If the eye-lids become inflamed, discontinue for a few days, and then begin again.

69. *Soft Water*, 3 ozs.; quinine, 10 grains; diluted sulphuric acid, 10 drops; simple syrup, 1 oz. Mix. A teaspoonful every two or three hours.

70. *Quinine*, 10 grains; diluted sulphuric acid, 10 drops; white sugar, 4 drams; cinnamon water, 4 ozs.; tincture of kino, 2 drams. Mix. One teaspoonful every three hours.

71. *Tartrate of Iron*, 40 grains; soft water, 2 ozs.; syrup of ginger, ½ oz. Mix. 20 to 40 drops every three hours.

72. *Potassio-tart.* Iron, 4 scruples; quinine, 4 scruples; alcoholic ext. of black cohosh, 4 scruples. Mix. Make 48 pills.

73. *Rose Water*, 6 ozs.; syrup of orange peel, 1 oz.; muriated tinct. of iron, 1 oz. Mix. For an adult, one teaspoonful in a wine-glass of water after each meal.

74. *Precipitated Carbonate of Iron*, 30 drams; ext. of conium, 15 drams;

syrup of balsam of Tolu, 6 ozs.; oil of cinnamon, 12 drops; oil of lemon, 12 drops; alcohol, 2 ozs.; water, 1 pint; brandy, ½ pint; loaf sugar, 4 ozs. Mix. Give from one to three tablespoonfuls three or four times a day, in insanity.

75. *Citrate of Iron*, 1 dram; sulphate of quinine, 1 scruple; ext. of nux vomica, 8 grs. Mix. Make 32 pills. One pill three times a day.

76. *Nitric Acid*, 1 dram; hydrochloric acid, ½ dram; comp. infusion of gentian, 1½ ozs. Mix. One teaspoonful in water is a dose.

77. *Sulph. Quinine*, 1 dram; tartaric acid, 6 grs.; water, 1 drop. Mix. Make 30 pills. *Dose.*—One pill, to be repeated as often as needed.

78. *Diluted Nitric Acid*, 4 drams; diluted muriatic acid, 4 drams; syrup of orange peel, 1 dram; water, 1½ ozs. Mix. One teaspoonful in a wine-glass of water, taken before meals.

General and Nerve Tonics.

79. *Valerianate of Quinine*, ½ dram; ext. of black cohosh, 1 dram; ext. of ladies slipper, 2 drams. Mix. Make 60 pills. Take one pill, every one, two, three, or four hours, according to the urgency of the case.

80. *Iron by Hydrogen*, 24 grs.; sulphate of morphia, 1 gr.; ext. of nux vomica, 5 grs. Mix. Make 24 pills. For an adult, one pill three times a day.

81. *Ext. of Scullcap*, 2 drams; ext. of chamomile, 2 drams; ext. of boneset, 1 dram; quinine, 1 dram; pulv. cayenne, 1 scruple; oil of valerian, ½ dram. Beat well together and make 90 pills. For an adult, one pill every two or three hours.

82. *White Vitriol*, 1 dram; ext. of nux vomica, 8 grs. Mix. Make 32 pills. One pill three times a day.

83. *Strychnia*, 2 grs.; ext. of aconite, 16 grs.; ext. of hyoscyamus, 16 grs.; quinine, ½ dram. Mix. Make 32 pills. One pill three times a day.

84. *Citrate of Iron*, 1 dram; trisnitrate of bismuth, 1 dram; sulphate of quinia, 1 scruple; ext. of nux vomica, 6 grs. Mix. Make 32 pills. Take one pill three times a day.

Nerve Tonics and Antispasmodics.

85. *Strychnine*, 2 grs.; ext. belladonna, 5 grs.; alcoholic extract of black cohosh, 2 scruples. Mix. Make 40 pills. One pill four times a day.

86. *Strychnine*, 2 grs.; diluted phosphoric acid, 1 oz.; peppermint water, 3 pints. Dissolve the strychnine in the acid; then add the peppermint water. A tablespoonful to be taken three times a day, in palsy, dyspepsia, neuralgia, and in most states of the nervous system requiring tone. Also in fever and ague.

87. *High Cranberry Bark*, 1 oz.; skunk cabbage root, ½ oz.; scullcap, ½ oz.; cardamom seeds, 2 drams; pulv. cayenne, 2 drams. Put these to a pint of wine, shake well every day for three or four days. A tablespoonful four times a day.

88. *Distilled Water*, 2 ozs.; valerianic acid, 1 oz.; subcarbonate of ammonia enough to neutralize the acid; then add alcoholic ext. of valerian, 2 scruples. A teaspoonful three times a day. For Neuralgia.

89. *Ext. of Valerian*, 12 grs.; ext. of hyoscyamus, 12 grs.; oxide of zinc, 24 grs. Mix. Make 12 pills. One pill twice a day.

90. *Sulphate of Morphia*, 2 grs.; cyanide of potassium, 4 grs.; ext. of valerian, 4 grs. Make 24 pills. One pill three times a day.

91. *Ext. of Hyoscyamus*, ½ dram; sulphate of morphia, 3 grs.; strychnine, 2 grs.; pulv. cayenne, ½ dram; sulphate of zinc, 15 grs. Make 30 pills. Take one four times a day. Excellent in neuralgia.

92. *Ext. of Hyoscyamus*, ½ dram; valerianate of zinc, 1 scruple. Mix. Make 30 pills. Take one, two or three times a day, for neuralgia of the face.

93. *Ext. of Hyoscyamus*, ½ dram; valerianate of iron, 1 dram. Mix. Make 30 pills. Give from one to three a day. For neuralgia, in its various forms.

94. *Tinct. of Black Cohosh*, 2 ozs.; tinct. of scullcap, 2 ozs. Mix. One teaspoonful from two to five times a day.

95. *Alcoholic Ext. of St. Ignatius's Bean*, 30 grs.; pulv. gum arabic, 10 grs. Make into 40 pills. Take one pill three times a day.

96. *Simple Syrup*, 1 oz.; prussic acid, 1 drop. Mix. A teaspoonful morning and evening. If no dizziness or sickness is produced within forty-eight hours, repeat the dose three times a day. This is for a child six months old; add one drop more of the acid for each additional year of the child's age.

97. *Comp. Pill of Galbanum*, 1 dram; comp. pill of valerian, 1 dram. Mix. Divide into 40 pills. One or two pills three times a day.

98. *Sulphate of Zinc*, 1 dram; comp. galbanum pill, ½ dram; ext. of hyoscyamus, 1 scruple. Mix. Make 32 pills. One pill three times a day. For St. Vitus's dance.

99. *Dioscorein*, 12 grs.; pulv. camphor, 4 grs.; pulv. cayenne, 12 grs.; white sugar, 1 scruple. Mix. Divide into four powders. Give one every 15 minutes.

100. *Ext. of High Cranberry Bark*, 1 scruple; cypripedin, 1 scruple; aletridin, 1 scruple; pulv. cayenne, 1 scruple. Mix. Make 20 pills. Take one pill an hour after each meal.

Alteratives and Tonics.

101. *Iodide of Potassium*, 1 oz.; compound infusion of gentian, or infusion of quassia, 6 ozs. *Dose.* — A tablespoonful, for secondary and tertiary syphilis, and other complaints. A teaspoonful for a child.

102. *Iodide of Iron*, ½ dram; compound tincture of colombo, 1 oz.; pure water, 7 ozs. Mix. A tablespoonful three times a day.

103. *Syrup of Iodide of Iron*, 1 oz. Thirty drops three times a day, in water. An excellent remedy in chlorosis, and all other low states of the blood connected with scrofula.

Expectorants and Cough Preparations.

104. *Tartar Emetic*, 1 grain; boiling water, 10 drams. Mix. Take one teaspoonful every two hours.

105. *Infusion of Senega*, 4 ozs.; syrup of ipecac, 1 dram; syrup of squills, 3 drams; tartar emetic, 1½ grains. Mix. A teaspoonful every ten minutes.

106. *Tincture of Lobelia*, ½ oz.; syrup of squills, ½ oz. Mix. Twenty drops four or five times a day for a child two years old.

107. *Peppermint Water*, 6 ozs.; epsom salts, 1 oz.; tartar emetic, 1 grain. Mix. Two tablespoonfuls every four hours.

108. *Hydrocyanic Acid*, 25 drops; wine of ipecac, 2 drams; syrup of tolu, 1 oz.; soft water, 3 ozs. Mix. A teaspoonful four or five times a day. An excellent remedy in hooping cough.

109. *Tinct. Blood-root*, 1 oz.; laudanum, 2 drams; wine of ipecac, 4 drams; syrup of tolu, 2 ozs. Mix. Dose from 30 to 60 drops four times a day.

110. *Tinct. Blood-root*, 1 oz.; sulphate of morphia, 1½ grains; tinct. digitalis, ½ oz.; wine of antimony, ½ oz.; oil of wintergreen, 10 drops. Mix. Dose from 20 to 40 drops twice or three times a day. Excellent for a hard, dry cough.

111. *Tinct. of Lobelia*, ½ oz.; tinct. of blood-root, 2 ozs.; oil of spearmint, ½ dram; molasses, 5 ozs. Take one-half a teaspoonful as often as needed.

112. *Syrup of Tolu*, 1 oz.; syrup of squills, ½ oz.; wine of ipecac, 2 drs.; paragoric, 3 drs.; mucilage of gum arabic, 1½ ozs. Mix. Take a teaspoonful occasionally.

113. *Tinct. Blood Root*, 2 drams; syrup of tolu, 1 oz.; mucilage of gum arabic, 3 ozs.; diluted hydrocyanic acid, 40 drops; sulphate of morphia, 2 grs. Mix. Dose, from one to two teaspoonfuls.

Carminatives.

114. *Bruised Cloves*, 2 drams; boiling water, 1 pint. Macerate for two hours in a covered vessel, and strain. A wine-glassful to be taken occasionally.

115. *Comp. Tinct. of Cardamom*, 2 ozs.; comp. tinct. of lavender, 2 ozs.; comp. tinct. of gentian, 2 ozs. Mix. One teaspoonful at a time, as occasion may require.

Narcotics and Anodynes.

116. *Extract of Hyoscyamus*, 1 scruple; gum camphor, 1 scruple; Dover's powder, 1 scruple. Mix, and make into 20 pills. *Dose.* — One twice a day, for painful menstruation.

117. *Powdered Camphor*, 12 grains; powdered castile soap, 12 grains; powdered opium, 12 grains; syrup, 2 scruples. Mix. Make into 12 pills. Take one every hour till the effects of opium are experienced.

118. *Laudanum*, ½ oz.; wine of ipecac, ½ oz.; spirits of nitric æther, ½ oz. Mix. One teaspoonful every hour, till narcotic effects are observed.

119. *Camphor*, 2 drams; chloroform, 1 dram; the yolk of an egg. Mix, and rub together; and then add, tincture of opium, 1 oz.; aromatic spirits of ammonia, 1 oz. Mix well. Take one teaspoonful every hour until it proves anodyne.

120. *Camph.* ½ dram; extract of opium, 6 grains; mucilage of gum arabic, 2 scruples. Make 10 pills.

121. *Chloroform*, 2 ounces; compound sulphuric ether, 2 ozs.; laudanum, 2 ozs.; tinct. cayenne, 1½ ozs.; hydrocyanic acid, diluted, ½ oz. Mix. Dose. — Half a teaspoonful every three hours till anodyne effects are experienced.

122. *Ext. of Belladonna*, 10 grs.; hydrocyanic acid, 40 drops; tinct. colombo, 1 oz.; simple syrup, 1 oz.; soft water, 2 ozs. Mix. One teaspoonful three or four times a day. Excellent in gastralgia and irritable dyspepsia. Also in asthma.

123. *Ext. of Belladonna*, 6 grs.; pulv. ipecac, 10 grs.; confection of roses, 2 grs. Mix. Make 30 pills. Take 1 pill twice a day.

Diaphoretics and Sedatives.

124. *Tinct. of American Hellebore*, 1 dram; tinct. of black cohosh, 2 ozs. Mix. Take one teaspoonful from three to six times a day. Excellent for Neuralgia.

125. *Pulverized Gum Arabic*, 1 scruple; soft water, 2 ozs.; sweet spirits of nitre, ½ oz.; tinct. of veratrum viride, 20 drops. Mix. Give half a teaspoonful every half hour.

126. *Pulv. Blood-root*, 2 drams; pulv. golden seal, 2 drams; pulv. sumach berries, 2 drams; pulv. bayberry bark, 2 drams. Mix. Make an infusion in a pint of hot water, and give a tablespoonful every half hour. To produce perspiration.

127. *Pulverized Camphor*, 2 grs., pulv. nitrate of potash, 2 grs.; pulv. opium, 1 gr. Mix. Make two powders. Take one on going to bed, in rheumatism.

Diuretics.

128. *Tincture of Digitalis*, 1 oz.; syrup of squills, 1 oz. Mix. Ten drops for a child 7 years old every four hours.

129. *Nitrate of Potassa*, 2 scruples; water, 1 quart. Mix. Flavor to suit.

130. *Infusion of Digitalis*, 4 ozs.; acetate of potash, 2 drams; sweet spirits of nitre, 2 drams; cinnamon water, 1½ ozs. Mix. A tablespoonful every four or five hours.

131. *Spirits of Mindererus*, 2 ozs.; sweet spirits of nitre, 1 oz. Mix. Take one teaspoonful every three hours.

Refrigerants.

132. *Cream of Tartar*, 2 scruples; water, 1 quart. Mix. Flavor to suit.

133. *Bicarbonate of Soda*, 30 grains; water, 6 ozs. Mix. To this mixture add 25 grains of tartaric acid, and take the whole foaming.

Stimulants.

134. *Muriate of Ammonia*, 1 oz.; soft water, 9 ozs. Mix. Take one table spoonful three or four times a day.

135. *Aromatic Spirits of Ammonia*, 2 drams; ether, 1 dram; laudanum, 20 drops; spirits of camphor, 1 dram. Mix. Half a teaspoonful as often as required.

Alteratives.

136. *Proto-iodide of Mercury*, 10 grains; extract of opium, 5 grains. Mix. Make 20 pills. Take one pill night and morning.

137. *Biniodide of Mercury*, 5 grains; extract of conium, 2 scruples. Mix. Make 20 pills. Take one pill night and morning.

138. *Compound Infusion of Sarsaparilla*, 1 pint; iodide of potassium, ½ oz. Mix. Take a teaspoonful after each meal.

139. *Compound Infusion of Sarsaparilla*, 1 pint; corrosive sublimate, 4 grains. Mix. Take a teaspoonful four times a day.

140. *Compound Infusion of Gentian*, 4 ozs.; iodide of potassium, ½ oz. Mix. One teaspoonful after each meal.

141. *Iodide of Arsenic*, 5 grains; soft water, 1 pint. Mix. One teaspoonful three times a day.

142. *Blue Pill*, 12 grains; pulverized ipecac, 3 grains; extract of hyoscyamus, 4 grains. Mix. Divide into 12 parts, one to be given every three hours.

143. *Pulverized Blood Root*, 1 scruple; iodide of arsenic, 2 grs.; extract of cicuta, 2 scruples. Mix. Make 40 pills. One pill three times a day.

144. *Iodide of Potassium*, 1 dram; water, ½ oz. Mix. Thirty drops to a child 7 years old, every hour.

145. *Comp. Syrup of Stillingia*, 1 pint; iodide of potassium, 1 oz. Mix. A tablespoonful after each meal.

146. *Fluid Ext. of Sarsaparilla*, 4 ozs.; fluid ext. of pipsissewa, 1 oz.; water, 1 quart; iodide of potassium, 2 ozs. Mix. Take a tablespoonful three times a day.

147. *Bicarbonate of Potassa*, 3 drams; water, 4 ozs. Mix. Add a tablespoonful of the solution to the same quantity of lemon juice, previously mixed with a tablespoonful of water. To be taken foaming, several times a day.

148. *Blue Pill*, ½ dram; extract of henbane, 1 scruple. Make 10 pills. One pill at night.

149. *Mercury with Chalk*, ½ dram; extract of conium, 1 scruple. Make into 8 pills. Take one pill night and morning.

150. *Corrosive Sublimate*, 4 grains; extract opium, 5 grains. Mix, and make into 20 pills. Take one pill night and morning.

151. *Iodide of Potassium*, 1 dram; syrup of sarsaparilla, 4 ozs. Mix. Take two teaspoonfuls three times a day.

Astringents.

152. *Sugar of Lead*, 2 scruples; opium, 1 scruple; conserve of red roses, 1 scruple. Beat into a mass, which is to be divided into 30 pills. Take one every hour, until narcotic effects are observed.

153. *Dover's Powder*, ½ dram; prepared chalk, 1 scruple. Mix, and divide into 12 equal powders.

154. *Chalk Mixture*, 4 ozs.; tinct. of catechu, ½ oz.; laudanum, 1 dram. Mix. Dose, in diarrhœa, two to four teaspoonfuls three times a day.

155. *Oil of Turpentine*, 1 dram; mucilage of gum arabic, 1 dram; simple syrup, ½ oz.; cinnamon water, 2 ozs. Mix. To be taken at a draught.

156. *Sugar of Lead*, 16 grains; prepared chalk, 1 dram; pulverized ipecac, 4 grains; pulverized opium, 2 grains. Mix. Divide into 16 portions, one to be given every three or four hours.

157. *Sugar of Lead*, 8 grains; vinegar, 8 drops; white sugar, 1 dram; soft water, 1 oz. Mix. A teaspoonful three or four times a day, until the discharges are abated.

158. *Prepared Chalk*, ½ dram; pulverized ipecac, 3 grains. Mix. Make 12 powders. Give one, two or three times a day.

159. *Pulverized Catechu*, 2 drams; bruised cinnamon, ½ dram; boiling water, 5 ozs. Steep in a covered vessel for one hour, and strain. A teaspoonful every two, three, or four hours, according to age, nature of the case, etc.

160. *Soft Water*, 1 oz.; sugar of lead, 5 grains; vinegar, 6 drops; loaf sugar, 3 drams. Mix. A teaspoonful every hour or two.

161. *Tinct. of Catechu*, ½ oz.; laudanum, 2 drs.; spirits of camphor, 2 drs.; tinct. of myrrhæ, 2 drs.; tinct. of cayenne, 2 drs. Mix. Dose, from half a teaspoonful to a teaspoonful, for diarrhœa.

162. *Syrup of Orange Peel*, 1 oz.; acetate of morphia, 2 grs.; tinct. of cinnamon, 6 drs.; tinct. cardamom, 2 drs. Mix. *Dose.* — A teaspoonful. A valuable remedy in diarrhœa.

Counter-Irritants.

163. *Tincture of Spanish Flies*, 1 oz.; olive oil, 2 ozs.; alcohol, ½ pint. Mix. To be applied externally, watching the effect, so as not to produce a blister.

164. *Water of Ammonia*, 1 dram; olive oil, 1 oz. Mix. Apply to the skin.

165. *Mustard Powder*, 1 tablespoonful. Mix with a little water to make a thick paste. Then spread upon a piece of brown paper or cotton cloth, and cover its surface with a piece of thin muslin to prevent the mustard from sticking to the flesh. Place it upon the sore or painful part, and keep it on fifteen or twenty minutes, or till a good degree of redness is produced.

166. *Vinegar of Spanish Flies*, 1 oz.; spirits of camphor, 1 oz. Mix. To be rubbed gently upon the skin. If applied freely, and rubbed thoroughly in, it may produce a blister.

167. *Yellow Wax*, Rosin, Lard, each, 6 drams. Melt over a slow fire, and then stir in slowly, when at a very moderate degree of warmth, 1½ drams of pulv. Spanish flies, to make an ointment.

168. *Water of Ammonia*, strong, 1 oz.; alcohol, 1 oz. Mix. Wet a piece of cotton cloth, and lay it upon the painful part, and cover it with flannel to prevent evaporation.

Ointments.

169. *Mercurial Ointment*, 1 oz.; extract of belladonna, 1 oz.; extract of henbane, 1 oz.; camphor, 10 grains. Mix. For external use.

170. *Extract of Belladonna*, ½ dram; lard, ½ oz. Mix. To be rubbed on the neck of the womb in painful menstruation.

171. *Prussic Acid*, 2 drams; sugar of lead, 1 dram; cocoa-nut oil, ½ oz.; lard, 1 oz. Make an ointment.

172. *Neapolitan Ointment*, 2 drams; extract of belladonna, 1 dram. Mix.

173. *Extract of Belladonna*, 15 grains; lard, 1 oz. Mix.

174. *Sulphuret of Lime*, 1 dram; camphor, in powder, 15 grains; lard, 1 oz. Make an ointment.

175. *Elder-Flower Ointment*, 1 oz.; oxide of zinc, 1 dram. Make an ointment.

176. *Oxide of Zinc*, 1 dram; spermaceti ointment, 1 oz. Mix.

177. *Napthaline*, 2 scruples; lard, 1 oz. Make an ointment. To be spread upon linen, and applied to the diseased skin night and morning.

178. *Mild Nitrate of Mercury Ointment*, 3 drams; sugar of lead, 16 grains; rose-water ointment, 1 oz.

179. *Laudanum*, ½ dram; sulphur, ½ dram; oxide of zinc, 1 dram; oil of almonds, 1 oz.; lard, 3 ozs. Make an ointment.

180. *Olive Oil*, 4 ozs.; white wax, 2 drams. Melt these together, and then add honey, 2 drams; croton oil, 20 drops.

181. *Elder-Flower Ointment*, 1 oz.; pulverized blue vitriol, 1 scruple. Make an ointment.

182. *Purified Beeves' Marrow*, or lard, 6 drams; oil of sweet almonds, 2 drams; pulverized Peruvian bark, 1 dram. Mix.

183. *Pulverized Sulphate of Copper*, 10 grs; extract of Spanish flies, 5 grs.; lard, 1 oz. Mix. Rub into the scalp.

184. *Iodide of Lead*, 1 dram; lard, 2 ozs. Mix. To be rubbed on the surface.

185. *Iodide of Potassium*, 1 dram; lard, 2 ozs. Mix.

186. *Basilicon Ointment*, 1 oz.; red precipitate, 1 dram. Mix.

187. *Iodide of Potassium*, ½ dram; lard, 1 oz. Mix.

188. *Veratria*, 4 grs.; lard, 5 drams. Mix.

189. *Tobacco Leaves* (fresh and sliced), 10 ozs.; diluted acetic acid, 4 pints; basilicon ointment, 13 ozs. Boil the tobacco in the acid, strain, and evaporate the decoction to six ounces. Add this to the basilicon ointment, heated, and stir till cold. For gathered breasts.

Liniments.

190. *Sweet Oil*, 1 oz.; strong water of ammonia, 1 oz. Mix. To be rubbed on with a piece of flannel.

191. *Lime Water*, 2 ozs.; flax seed oil, 2 ozs. Mix. Apply outwardly.

192. *Olive Oil*, 1 oz.; solution of potassa, 2 drams; strong mercurial ointment, 1 dram. Mix.

193. *Olive Oil*, 4 ozs.; oil of amber, 2 drams; oil of rosemary, 2 drams. Mix.

194. *Spirits of Turpentine*, 1 oz.; linseed oil, 1 oz.; lime water, 1 oz. Mix. For external use.

195. *Oil of Hemlock*, 2 drams; oil of origanum, 1 dram; camphor, 1 dram; opium, 1 dram; alcohol, 4 ozs. Mix.

196. *Soap Liniment*, 2 ozs.; chloroform, 1 dram. Mix.

197. *Tinct. of Aconite-root*, ½ oz.; opium liniment, ½ oz. Mix. For neuralgia, etc. Apply a tea-spoonful to the painful part.

198. *White Soap*, 12 ozs.; camphor, 6 ozs.; oil of rosemary, 1½ ozs.; alcohol, 4 pints; opium, 3 ozs. Mix and filter. An excellent liniment, acting at times like a charm in the removal of local pains.

199. *Sulphuric Acid*, 1 dram; spirits of turpentine, 1 dram; olive oil, 3 drams. Mix the oil and spirits of turpentine first, then gradually add the sulphuric acid. A valuable liniment for chilblains. To be rubbed on two or three times a day.

Washes, Lotions, Gargles, etc.

200 *Bruised White Oak Bark*, 1 oz.; water, 1½ pints. Boil down to a pint, and strain. To be used as a wash.

201. *Borate of Soda* or *Borax*, 2 drams; water, 4 ozs. Mix. To be used as a lotion.

202. *Alum*, 2 drams; water, 4 ozs. Mix. To be used as a lotion.

203. *Tannin*, 1 scruple; water, 4 ozs. Mix. For external use.

204. *Biborate of Soda*, ½ oz.; rose water, 6 ozs.; sulphate of morphia, 6 grains. Mix. To be used as a wash in itching of the female privities.

205. *Chlorinated Soda*, 1 oz.; water, 12 ozs. Mix. Rinse the mouth with it two or three times a day, but do not swallow.

207. *Rose Water*, 5 ozs.; sugar of lead, 8 grains; sulphate of zinc, 8 grs. Mix.

208. *Rose Water*, 4½ ozs.; nitrate of silver, 2 grains. Mix.

209. *Sulphate of Zinc*, 8 grains; tannin, 1 scruple; water, 5 ozs. Mix.

210. *Chloride of Zinc*, 6 grains; soft water, 2 ozs. Mix.

211. *Nitrate of Silver*, 10 grains; soft water, 1 oz. Mix.

212. *Corrosive Sublimate*, 5 grains; soft water, 1 pint. Mix.

213. *Alcohol*, 1 pint; soft soap of potash, 1 pint. Dissolve and filter, then add oil of citron, 1 oz. Mix. It will answer a good purpose if the oil of citron be omitted.

214. *Nitrate of Silver*, 2 scruples; nitric acid, 12 drops; soft water, 1 oz. Mix. Apply with a piece of lint tied to the end of a stick.

215. *Copperas*, 1 oz.; soft water, 1 pint. Mix.

216. *Alcohol*, 1½ ozs.; rose water, 4 ozs. Mix.

217. *Corrosive Sublimate*, 6 grains; spirits of rosemary, 1 oz.; alcohol, 1 oz.; emulsion of bitter almonds, 6 ozs. Mix.

218. *Solution of Sugar of Lead*, 12 drops; laudanum, 1 dram; water, 4 ozs. Mix. To be applied externally only.

219. *Nitrate of Silver*, 1½ drams; soft water, 1 oz. Mix.

220. *White Vitriol*, 1 dram; rose water, 3 ozs. Mix. Apply outwardly.

221. *Hydrocyanic Acid*, 4 drams; sugar of lead, 15 grains; alcohol, 4 drams; water, 7 ozs. Mix. Apply externally.

222. *Corrosive Sublimate*, 5 grains; almond mixture, ½ pint. Mix. Apply externally.

223. *Rose Water*, 4 ozs.; pulverized borax, ½ oz.; sulphate of morphine, 6 grains. Mix. To be applied to the parts many times a day.

224. *Sugar of Lead*, 2 drams; laudanum, 1 dram; soft water, ½ pint. Mix. For external use.

225. *Corrosive Sublimate*, 5 grains; cologne, 2 ozs.; soft water, 6 ozs. Mix. For external use only.

226. *Acid Nitrate of Mercury*, 1 dram; soft water, 4 ozs. Mix. Apply every second day.

227. *Sugar of Lead*, 3 grains; soft water, 1 oz. Mix. As a wash in inflammation of the mouth in infants.

228. *Mucilage of Gum Arabic*, 1 oz.; syrup of orange peel, ½ oz.; chloride of lime, 15 grains. Mix.

229. *Decoction of Peruvian Bark*, 3 ozs.; syrup of orange peel, 1 oz.; chloride of soda, 1 oz. Mix.

230. *Creosote*, 4 drops; mucilage of gum arabic, ½ oz.; camphor water, 8 ozs. Mix.

231. *Vinegar*, 1 dram; alcohol, 3 drams; simple syrup, 1 oz.; water, 3 ozs. Mix.

232. *White Oak Bark*, 1 oz.; water, 1 pint. Boil away one quarter, and strain; then add alum, 1 scruple. Apply to the parts with a soft sponge, or dossil of lint, several times a day.

233. *Hydrochloric Acid*, ½ dram; honey, 1 oz.; rose water, 1 oz. Mix. Apply three or four times a day.

234. *Sulphate of Copper*, ½ dram; soft water, 1 oz. Mix. To be applied twice a day to the ulcers in gangrene of the mouth.

235. *White Vitriol*, 1 dram; soft water, 2 drams. Mix. Then add honey, 2 drams; tincture of myrrh, 2 drams. To be applied twice a day to the ulcers in gangrene of the mouth.

236. *Creosote*, 1 dram; alcohol, 1 dram. Mix. To be applied, with a camel's hair pencil, to the gangrenous ulcers of the mouth after running a lancet through the sloughs.

237. *Acid Nitrate of Mercury*, ½ dram; soft water, 1 oz. Mix. To be injected into the throat with the shower syringe, or applied to ulcers with a pencil.

238. *Rose Water*, 4 ozs.; sugar of lead, 2 drams. Mix. For external use.

239. *Rose Water*, 2 ozs.; sugar of lead, 1 scruple. Mix. For external use.

240. *Tincture of Arnica*, ½ oz.; cold water, 4 ozs. Mix. For external use.

241. *Tinct. Blood-root*, 2 ozs.; solution chloride of Soda, 2 ozs.; tinct. henbane, 2 ozs. Mix.

242. *Bucket of Warm Water*; cayenne pepper, pulverized, 1 tablespoonful; ground mustard, 2 tablespoonfuls. Mix. As a foot bath in suppression, etc.

243. *Chlorate of Potash*, ¼ oz.; strong hydrochloric acid, 40 drops; water, 1 pint. Mix. An excellent wash for chronic fetid ulcers,—soon converting a foul ulcer to a healthy-looking one. A good gargle.

244. *Powdered Golden Seal*, 1 dram; powdered cranesbill, 1 dram; powdered witch-hazel bark, 1 dram. Mix. Pour upon these half a pint of boiling water. Let them stand till cold. To swab an ulcerated throat in scarlet fever, and for other purposes.

245. *Pulv. Cayenne*, 1 dram; salt, 1 dram; boiling water, 1 gill. Mix, and let them stand fifteen minutes. Then add one gill of vinegar. Let them stand an hour, and strain. Put a teaspoonful in a child's mouth once an hour, in malignant scarlet fever.

Injections.

246. *Castor Oil*, 1 gill; pulv. cayenne, 10 grs.; molasses, 1 gill; table salt, 1 teaspoonful; warm water, 1 pint. Mix.

247. *Senna Leaves*, 2 drams. Steep in a pint of water. Then add one ounce of epsom salts, and strain. A quarter of this may also be taken as a brisk purge.

248. *Castor Oil*, 2 ozs.; tinct. prickly ash bark, ½ oz.; comp. tinct. of Virginia snake root, 2 drams; infusion of boneset and senna, equal parts, ½ pint. Mix.

249. *Castor Oil*, 1 oz.; salts of tartar, ½ oz.; warm water, 1 pint. Mix.

250. *Epsom Salts*, 1 oz.; senna leaves, ½ oz.; pulv. cayenne, 10 grs.; boiling water, 1 pint. Let the water stand upon the senna and cayenne 15 minutes. Then pour it off, and add the salts.

251. *Thoroughwort*, 1 oz.; senna, 1 oz.; lobelia, ½ dram; cayenne, 10 grs.; epsom salts, 1 table-spoonful; molasses, ½ pint; boiling water, 1 pint. Make a strong decoction of the herbs, and then add the salt and molasses.

252. *Wine of Ipecac*, 1 oz.; spirits of turpentine, 1 oz.; castor oil, 1 oz.; molasses, ½ pint; warm water, ½ pint. Mix.

253. *Flax Seed Tea*, ½ pint; laudanum, 40 drops. Mix.

254. *Nitrate of Silver Crystals*, 10 grains; corrosive sublimate, 5 grs.; sugar of lead, 1½ drams; white vitriol, 1½ drams; soft water, 6 ounces. Mix. An injection for certain forms of whites, etc.

255. *Bruised Galls*, ½ oz.; two large poppy heads; water, 1 pint. Boil a quarter of an hour, and strain. For piles.

256. *Common Salt*, 1 oz.; chamomile flowers, ½ oz.; pulv. aloes, 1 dram. Boil the chamomile and aloes five minutes, in one pint of water, then strain, and add the salt.

Hair Oils, Washes, etc.

257. *Cologne*, 2 ozs.; tincture of Spanish flies, 2 drams; oil of rosemary, 10 drops; oil of lavender, 10 drops. Mix. Apply cautiously. If soreness of the scalp is produced, omit for a short time.

258. *Castor Oil*, 2½ pounds; strongest alcohol, 2½ pints; pulv. Spanish flies, ½ oz.; oil of burgamot, 2½ ozs.; otto of roses, 20 drops. Mix. Let them stand for a few days, and filter. A superior preparation for keeping the hair from falling, and to prevent dandruff.

259. *Tinct. Benzoin, comp.*, 2 drams; tinct. Spanish flies, 2 drams; castor oil, 6 ozs.; oil burgamot, 1 dram; oil of cassia or verbena, 15 drops; strong alcohol, 9½ ozs. Mix. As a hair wash, better even than the above.

260. *Slaked Lime*, 2 drams; bicarbonate of soda, 3 drams; lard, 2 ozs. Mix.

261. *Slaked Lime*, 1 oz.; bicarbonate of potassa, 2 ozs.; charcoal in powder, 1 dram. Mix. Apply to the parts, and wash off when dry. Keep in well stopped bottles.

262. *Slaked Lime*, 4 ozs.; orris powder, 1½ ozs. Mix. Apply to the parts, and wash off when dry.

263. *Spanish White*, ¼ pound; litharge, ¼ pound; slaked lime, ½ pound. Mix. Pulverize in a mortar. To be kept dry. When used, mix with water to a paste the thickness of cream. Spread on the hair and lay over it a wet cloth over night.

264. *Sulphur*, 1 oz.; sugar of lead, 1 oz.; rose water, 4 ozs. Mix. Apply to the hair.

265. *Nitrate of Silver*, 1 dram; nitric acid, 1 dram; soft water, 1 pint; sap green, 3 drams; pulverized gum arabic, 1 dram. Mix. Keep well corked.

266. *Hydrosulphuret of Ammonia*, 1 oz.; liquor potassa, 3 drams; soft water, 1 oz. Mix. Apply this with a tooth brush 15 or 20 minutes. Then brush the hair over with the following: — nitrate of silver, 1 dram; soft water, 2 ozs.; using a clean comb to separate the hair.

Miscellaneous.

267. *Wine of Spurred Rye*, 2 ozs. *Dose.* — One teaspoonful three times a day. For profuse menstruation from a relaxed state of the womb.

268. *Sulphate of Iron*, 1 dram; sub-carbonate of potash, 1 dram. Mix, and make into 38 pills. One pill twice a day, and gradually increasing to four a day, in chlorosis.

269. *Sulphate of Iron*, 1 dram; extract of hops, 15 grains; extract of poppies, 15 grains; oil of cinnamon, 15 drops. Mix, and make into 24 pills. One pill two or three times a day.

270. *Oxide of Zinc*, 2 drams; ext. of cicuta, 2 scruples. Mix. Make 48 pills.

271. *Pulverized Savin*, 1 scruple; sulphate of copper, 1 scruple. To be sprinkled on venereal lumps or tumors, called condylomata, on the female genitals, or elsewhere.

272. *Balsam of Copaiva*, 1 oz.; oil of cubebs, 2 drams; laudanum, 1 dram; mucilage of gum arabic, 2 ozs.; sweet spirits of nitre, ½ oz.; compound spirits of lavender, 3 drams; camphor water, 4 ozs.; white sugar, 2 drams; oil of partridge-berry, 5 drops. Mix. Take a table-spoonful three or four times a day. For gonorrhœa.

273. *Balsam of Copaiva*, 1 oz.; pulverized cubebs, 2 ozs.; essence of peppermint, 30 drops. Make a thick paste, like dough.

274. *Pulverized Borax*, 1 oz.; pulverized white sugar, 1 oz. Mix. A little to be dissolved on the tongue.

275. *Pulverized Borax*, ½ oz.; honey, 4 ozs. Mix.

276. *Hydrochloric Acid*, 1 dram; honey, 1 oz. Mix. For touching large curdy patches in sore mouth of children.

277. *Pulverized Ipecac*, 3 grains; precipitated sulphur, 2 scruples; extract of hyoscyamus, 6 grains. Mix. Divide into 12 parts. One to be taken every three or four hours.

278. *Pulverized Belladonna-root*, 5 grains, compound ipecac. powder, 10 grains; precipitated sulphur, ½ dram; white sugar, 2 scruples. Mix. Make 20 powders. One every three hours to a child two years old.

279. *Pulverized Alum*, 25 grains; extract of cicuta, 12 grains; syrup of red poppies, 2 drams; spearmint water, 3 ozs. Mix. A dessert-spoonful every six hours for a child two or three years old.

280. *Camphor*, 1 dram; sulphuric ether, 1 oz. Mix. Ten drops every half hour.

281. *Pulverized Rhubarb*, 1 scruple; mercury with chalk, 10 grains; aromatic powder, 5 grains. Mix. Divide into 10 powders. One every four or five hours.

282. *Pulv. Blood-root*, ½ to 1 oz.; chloride of zinc, ½ to 2 ozs.; water, 2 ozs. Add enough wheat flour to make a paste as thick as molasses.

283. *Sal. Volatile*, ½ dram; camphor water, 1 oz. Mix.

284. *Tinct. of Nux Vomica*, ½ oz.; tinct. aconite, 2 drams; volatile tinct. of guaiacum, 2 drams. Mix. Thirty drops every three hours.

285. *Tinct. of Black Cohosh*, 2 ozs.; tinct. of digitalis, 2 drams. Mix. One teaspoonful from two to five times a day.

286. *Barberry Bark*, 1 oz.; pipsissewa herb, 2 ozs.; wild cherry bark, 1 oz.; bitter-root, 1 oz. Mix. Infuse for several hours in 4 pints of water One tablespoonful three or four times a day.

287. *Horse Radish Root*, 1 oz.; bayberry bark, 1 oz.; barberry bark, 1 oz.; wild cherry bark, 1 oz.; prickly ash bark, 1 oz. Reduce the whole to a coarse powder, and infuse for several hours in 4 pints of cider. A tablespoonful three or four times a day.

288. *Mercury*, 95 parts; balsam of storax, 48 parts; diacalon plaster, 312 parts; wax, rosin, turpentine, each, 16 parts; ammonia, bdellium, each, 5 parts; olibanam and myrrh, each, 5 parts; saffron, 3 parts; spirits of lavender, 2 parts. Mix, and spread.

289. *Populin*, 20 grs.; sanguinarin, 10 grs.; pulv. white sugar, 30 grs. Rub well together, and divide into 16 powders. Take one four times a day. At the same time use prescription 73.

290. *Ptelein*, 24 grs.; hydrastin, 24 grs.; ext. of belladonna, 3 grs.; ext. of nux vomica, 2 grs. Mix. Make 24 pills. Take one three times a day.

291. *Strychnia*, 2 grs.; pulv. cantharides, 4 grs.; pulv. arnica leaves, 1 dram. Mix. Divide into 32 powders. One to be taken three times a day.

292. *Wine of Colchicum Seeds*, 1 oz.; fluid ext. of dandelion, 1 oz. Mix. One teaspoonful three times a day.

293. *Willow Bark*, 1 oz.; boiling water, 1 pint. Boil for ten minutes, and strain. *Dose.* — A wine-glass full once in three hours.

294. *Canada Balsam*, 1 dram; slaked lime, 1 dram. Mix, to form a paste. An excellent remedy for tooth ache, when pressed into the cavity.

295. *Tinct. Black Cohosh*, 1 oz.; iodide of potassium, 2 drams; syrup of ipecac, 1 oz.; spring water, 2 ozs. Mix. A teaspoonful three or four times a day, in rheumatism and cell-dropsy.

296. *Tinct. Black Cohosh*, 1 oz.; tinct. myrrh, 6 drams; laudanum, 1 dram; tinct. cayenne, 1 dram. Mix. Take 30 or 40 drops four times a day, for dropsy.

297. *Solution Chloride of Soda*, 6 drops; water, 2 ozs. Mix. To be taken at a draught. A sure remedy for offensive breath from deranged stomach.

298. *Cream of Tartar*, $\frac{1}{2}$ oz.; fresh lemon peel, bruised, 4 ozs.; Loaf sugar, 4 ozs.; boiling water, 3 pints. Mix, and, after standing a while, strain.

299. *Citric Acid*, $\frac{1}{2}$ dram; bi-carbonate of potassa, $\frac{1}{2}$ dram; lemon syrup, 1 oz.; soft water, 6 ozs.; epsom salts, 1 oz. Mix. Two table spoonfuls, to be repeated every four hours, if necessary.

300. *Hard Wood Ashes*, 1 quart; common soot, $\frac{1}{2}$ gill; water, 6 pints. Digest, settle, and filter. Take one tablespoonful three times a day, in acidity of stomach.

301. *Peppermint Water*, $1\frac{1}{2}$ ozs.; wine of colchicum-root, $\frac{1}{2}$ oz.; sulphate of morphia, 1 gr.; magnesia, 1 scruple. *Dose.* — One teaspoonful three or four times a day. Excellent for rheumatism.

302. *Cream of Tartar*, $1\frac{1}{2}$ ozs.; sulphate potassa, $\frac{1}{2}$ oz.; pulv. squills, 2 drs.; tartar emetic, 2 grs. A teaspoonful of this mixture to be taken four or five times a day, in dropsy.

303. *Pulv. Alum*, $\frac{1}{2}$ dram; white precipitate, 1 grain. Rub these well together, and place the powder in a bottle; then add $1\frac{1}{2}$ drams of glycerine. Shake the bottle until the mixture is of the consistence of cream, and repeat the shaking whenever it is about to be applied to the skin. For external use in erysipelas.

304. *Copaiva*, 5 drams; yolk of one egg; gum of extract of opium, one grain; water 7 ounces. Mix. To be used as an injection several times a day in gonorrhœa.

305. *Tannin*, 3 grains; ext. belladonna, $\frac{3}{4}$ grain; ext. conium, $2\frac{1}{2}$ grains; infusion of senna, 3 ozs.; fennel water and syrup of marshmallow, each $1\frac{1}{2}$ ozs. Mix. A tablespoonful to be taken every two hours, in chronic bronchitis, and other complaints.

306. *Glycerine*, 1 dram; tannin, 1 dram. Dissolve the tannin in the glycerine. Excellent for sore nipples, and for chaps and excoriations generally.

307. *Collodion*, 1 oz.; venice turpentine, ½ oz.; castor oil, 2 drams. Mix. To be applied outwardly, for chilblains and chaps. For cancer, manganic acid. Not as painful as other caustics.

308. *Sulphate of Copper*, 2 grains; wine of opium, 1 dram; soft water 2 drams. Mix. Apply freely with a soft camel hair brush, three times a day, for purulent ophthalmia.

309. *Pure Acetic Acid*, 2 drams; soft water 3 ozs.; simple syrup, 3 drams. Mix. A teaspoonful is to be taken every three hours, in scarlet fever, at the same time using sheet baths with tepid water.

310. *Compound tincture of Peruvian Bark*, 4 ozs.; citrate of iron 44 grains; citric acid, 20 grains. Dissolve the citric acid in the tincture, and then the citrate of iron. After a few days, filter. Dose, one to two teaspoonfuls.

311. No. 1. *Gallic acid*, 10 grains; dissolve in alcohol, 2 drams; water, 6 drams. No. 2. Crystals of Nitrate of Silver, ½ dram; water ½ oz. Dissolve and add strong liquor of ammonia, till it becomes clear; then add powdered gum arabic, and dilute, if necessary, to 6 drams. This will color black; to color *brown*, reduce it. An excellent hair-dye. Use the common directions, where there is a No. 1 and No. 2.

312. *Epsom Salts*, 2 drams; magnesia, 1 scruple; syrup of ginger, 1 dram; spearmint water, 11 drams. Mix. To be taken at a draught. This will be retained by the stomach, when most other things are rejected.

313. *Diluted Nitro-Muriatic Acid*, 2 drams; sweet spirits of nitre, 2 drams; simple syrup, ½ oz., water 7½ ozs. Mix. Two tablespoonfuls are to be taken three times a day. Excellent in dyspepsia, with nasty tongue, and inactive liver.

314. *Rose Leaves*, 1 scruple; boiling water, 8 ozs.; diluted nitric acid, 2½ drams. Mix. After standing half an hour, strain, and use as a wash for ulcers.

315. *White Vitriol*, 1 dram; water, 1 pint. Mix. To be used as a wash for ulcers, etc.

316. *Citrate of Iron and Strychnine*, 1 dram; syrup of orange peel, 2 ozs.; soft water, ½ pint. Mix. Give one teaspoonful three times a day in neuralgia, and in other cases in which a nerve tonic is needed.

317. *Aloes and Soap Pill*, 10 grains. Divide into two pills; or, compound pill of aloes, 10 grs. Divide into two pills.

318. *Compound Colocynth Pill*, 2½ scruples; castile soap, 9 grs.; oil of anise, 2 drops. Mix, and make 12 pills. Two to be taken at bed-time.

319. *Compound tincture of Senna*, 2 drams; epsom salts 2 drams; diluted sulphuric acid, 8 drops; spirits of nitric ether, ½ dram; infusion of rhubarb, 10 drams. Mix. To be taken at a draught.

320. *Sulphate of Iron*, 2 grs.; epsom salts, 2 scruples; diluted sulphuric acid, 10 drops; compound tincture, 1 dram; syrup of poppies, 1½ drams; pimento water, 9 drams. To be taken at a draught twice a day.

321. *Pulverized Rhubarb*, 12 grains; carbonate of magnesia, 10 grains; aromatic spirit of ammonia ½ dram; syrup of ginger, 1 dram; spearmint water, 10 drams. Mix. To be taken at a draught.

322. *Comp. infusion Senna*, 5 drams; infusion rhubarb, 5 drams; comp

tincture cardamom, ½ dram; syrup, 1½ drams. Mix. To be taken at a draught, by dyspeptic persons.

323. *Carbonate of Soda*, 10 grs.; aromatic spirit of ammonia, ½ dram; tincture of orange peel, 1 dram; syrup of orange peel, 1 dram; compound infusion of gentian, 10 drams. Mix. To be taken at a draught twice a day.

324. *Trisnitrate of Bismuth*, 1 dram; comp. tragicanth powder, 2 drams; compound tincture cardamom, ½ ounce; tincture of ginger, ½ ounce; spearmint water, 7 ounces. Mix. Two tablespoonfuls to be taken twice a day, in dyspepsia.

324. *Trisnitrate of Bismuth*, 6 grs.; bicarbonate of soda, 6 grains; pulverized cayenne, 1 grain. Mix. This quantity to be taken twice a day, in dyspepsia, with acidity of the stomach.

325. *Solution of Acetate of Ammonia*, ½ ounce; tincture of orange peel, 1 dram; syrup of orange peel, 1 dram; tincture of cayenne, 20 drops; comp. infusion of orange peel, 6 drams. Mix. The whole to be taken to relieve headache, after intoxication.

326. *Magnesia*, 15 grains; solution of potassæ, 15 drops; comp. tincture of senna, 1 dram; comp. infusion of senna, 6 drams; syrup of ginger, 1 dram; comp. infusion of orange peel, ½ ounce. Mix. Taken at a draught, as an aperient, in sick and billious headaches.

327. *Aromatic Spirit of Ammonia*, 1 dram; tincture of columbo, 1 dram; infusion of columbo, 10 drams; syrup of poppies, 1 dram. Mix. To be taken at a draught, three times a day.

328. *Diluted Sulphuric Acid*, 15 drops; diluted hydrochloric acid, 10 drops; tincture of orange peel, 1 dram; comp. infusion of gentian, 6 drams; syrup of poppies, 1 dram. To be taken at a draught, three times a day, half an hour before meals.

329. *Diluted Nitric Acid*, 12 drops; diluted hydrochloric acid, 8 drops; infusion of cascarilla, 11 drams; syrup of poppies, 1 dram. Mix. To be taken at a draught, twice a day.

330. *Blue Pill*, 4 grs.; comp. pill of rhubarb, 4 grs.; ext. hyoscyamus, 2 grs. Mix. Make two pills; one pill to be taken at night.

331. *Ext. Hyoscyamus*, 2½ grs.; pulv. camphor, 2½ grs. Mix. Make two pills; one to be taken when the pain is most severe, in nervous headache.

332. *Comp. Tragacanth Powder*, 8 grs.; oil of lemon, 3 drops; camphor water, 11 drams; comp. tinct. cardamom, ½ dram; tinct. hyoscyamus, ½ dram; chloroform, 15 drops. Mix.

333. *Tinct. Hyoscyamus*, ½ dram; aromatic spirit of ammonia, ½ dram; syrup of orange peel, ½ dram; peppermint water, 10 drams. Mix. In nervous and hysterical cases.

334. *Soap Liniment*, 2½ ozs.; liquor ammonia, ½ dr.; laudanum, ½ oz. Mix. Make a liniment.

335. *Comp. Pill of Colocynth*, 7 grs.; ext. of colchicum, 2 grs.; oil of caraway, 1 drop. Mix, and make two pills. To be taken at bed-time in rheumatic headaches.

336. *Chloride of Zinc*, 6 ozs.; pulv. bloodroot, 2 ozs.; myrtle wax, 1 oz.; water of extract of opium, 6 drams; extract of conium, 6 drams. Mix, and make an ointment.

337. *Iodide of Lead*, 1 scruple; glycerine, 1 dram; spermaceti ointment, 2 ozs. Make an ointment.

338. *Rhubarb Pulv.*, ½ oz.; spearmint herb, pulv. ½ oz.; pulv. cascarilla, ½ oz.; pulv. bicarbonate of potassa, ½ oz.; pulv. wild cherry bark, ½ oz.; Mix, and pour on one quart of hot water. Let this stand till cold, and add half a pint of brandy. Dose half a wineglassful.

339. *Ext. Belladonna*, 6 grains; pulv. ipecac, 10 grains; confection of roses, 2 grains. Mix. Make 30 pills, one pill to be taken twice a day.

340. *Dioscorein*, 12 grains; pulv. camphor, 4 grains; pulv. cayenne, 12 grains; white sugar, 1 scruple. Mix. Divide into four powders. Give one every fifteen minutes.

341. *Leptandrin*, 12 grains; geranium, 12 grains; myricin, 12 grains. Mix. Divide into twelve powders, of which one may be given three or four times a day.

342. *Quinine*, ½ dram; pulv. catechu, 1 dram; pulv. opium, 15 grains. Mix. Make 32 pills. Give one pill three times a day.

343. *Compound Syrup of Rhubarb and Potassa*, 4 ozs.; tincture of prickly ash berries, 1 oz.; essence of peppermint, 1 dram; paregoric, 4 drams. Mix. A tablespoonful should be given every hour until it operates gently on the bowels.

344. *Pulv. Camphor*, ½ dram; pulv. opium, 16 grains; pulv. cayenne, ½ dram. Mix. Make 16 pills; one every hour, in cholera.

345. *Rhubarb*, 4 ozs.; black cohosh root, 2 ozs.; wild cherry bark, 2 ozs.; geranium, 2 ozs., coarsely powder them, and mix. Add two pints of brandy and two pints of water. Let the mixture stand five or six days, stirring often, and then strain. Add four pints of water to the dregs, boil slowly to two pints, strain, and add to this the previous tincture. Sweeten with loaf sugar. Take a tablespoonful every one, two, or three hours.

346. *Beth Root*, 1 oz.; geranium, 1 oz.; blackberry root, 1 oz.; wild cherry bark, 1 oz.; cinnamon, 1 oz. Powder the whole, and add to them 1½ pints brandy, and 1½ pints water. Let them stand several days, stirring frequently. Add sweetening if preferred. Dose. One or two teaspoonfuls every two or three hours.

347. *Raspberry Leaves*, 1 oz.; geranium, 1 oz.; blackberry root, 1 oz.; leptandra root, 1 oz. Mix, and make three pints of strong decoction. Dose. A teaspoonful every hour. Suitable for a gargle.

348. *Sugar of Lead*, 24 grains; vinegar, 1 dram; syrup of poppies, 1 oz.; rose water, 3 ozs.; soft water, 4 ozs. Mix. Dose, one or two tablespoonfuls.

349. *Potassio-tartrate of iron*, ½ oz.; syrup of orange peel, 1 oz.; water, 4 oz. Mix. Take two teaspoonfuls three times a day.

350. Geranium, golden seal, marshmallow, wild indigo root, rosemary, each half an ounce. Mix, and make one pint of strong infusion. After straining, add two drams powdered borax, and one gill of honey. An excellent astringent gargle.

351. *Dover's Powder*, 15 grains; leptandrin, 5 grains. Mix. Divide into ten powders. One every three hours, for a child.

352. *Dover's Powder*, 15 grains; calomel, 5 grains. Mix. Divide into ten powders. Give one every three hours to a child in croup.

353. *Hydrochlorate of ammonia*, ½ oz.; diluted acetic acid, ½ oz.; alcohol, ½ oz.; camphorated mixture, 15 ozs. Mix. A good scattering wash for hydrocele, etc.

354. Chloride of soda, nitrate of potash, and hydrochlorate of ammonia, equal parts, and water enough to dissolve them. Mix. An excellent freezing mixture.

CONCLUSION OF

HOMŒOPATHIC REMEDIES.

ORGANS OF CIRCULATION.

The heart, its appendages and valves; the pericardium, or membrane that covers the heart; the nerves that are distributed to the organ, as well as the arteries and veins, — are embraced in the organs of circulation.

Inflammation of the Heart. — *Endocarditis.*

When a sharp pain is sometimes felt in the region of the fifth rib, with quick pulse, flushed face, and hurried respiration, there are indications of Endocarditis. *Aconite* in the usual dose may be given every hour until the frequency of the pulse is diminished; *Verat. viride*, if *Aconite* fails to reduce the pulse in twenty-four hours. If the disease has been brought on by a shock or injury, *Arnica;* if from excessive grief, *Ignatia;* if from cold, *Arsenicum;* if it is the sequel of inflammatory rheumatism, *Pulsatilla;* if the disease terminates in dropsy of the pericardium or chest, *Apis mellifica*. Let the diet be simple, and easy of digestion.

Inflammation of the Pericardium. — *Pericarditis.*

Acute Inflammation of the pericardium is denoted by symptoms much the same as those attendant on Endocarditis, and may be brought on by a cold, a sudden check of perspiration, or simultaneously with a sudden attack of inflammatory rheumatism. *Aconite* repeated every hour. *Pulsatilla* or *Bryonia* may follow in the usual dose, and be repeated every hour until a change occurs. The pericardium, being a serous membrane, is liable to a profuse collection of serum about the heart. *Apis mellifica* in the usual dose every two hours will be likely to give relief; *Apocynum* and *Helleborus nig.* are also remedies that may be employed in curing this trouble. If the heart palpitates severely, give *Pulsatilla* or *Digitalis*. Diet simple and nutritious, and free from any exciting stimulants.

Chronic Inflammation of the Pericardium has similar symptoms, but not so severe. It often attends the gout, and is treated with the same remedies. *Colchicum* is a valuable remedy, and may be given three times a day, in usual doses. *Sulphur* is often useful.

Chronic Pericarditis may sometimes be cured by *Calcarea* or *Lycopodium*. *Aurum muriaticum* and *Spigelia* are called into requisition when

there is irregularity of the heart's action, *Arsenicum* when there is a burning sensation accompanying the pain. Diet, if the stomach will bear it, may be quite generous.

Dilatation of the Cavities of the Heart.

This trouble is manifest from a more perceptible action of the heart, than is normal; its motion being more violent. *Lachesis* when there is a disposition to sigh; *Belladonna* if there is a tendency of blood to the head; *Digitalis* if there is a quick, full pulse; or *Verat. viride; Aconite* if there is fever; *Pulsatilla* if there is rheumatism of the joints at the same time.

Imperfect Action of the Valves of the Heart.

A difficulty such as this is not denoted by any one set of symptoms, but it may give rise to various sufferings, such as fainting, rush of blood to the head, apoplexy, and convulsions. Fainting requires *Pulsatilla*, *China*, *Bryonia*, and *Rhus*. Rush of blood to the head, *Belladonna;* apoplexy, *Aconite*, *Belladonna*, and cold application to the head; convulsions require *Chamomilla*, *Belladonna*, *Hyoscyamus*, and *Digitalis*. Whichever remedy is selected may be given every half-hour until relief is obtained, or change. Spasmodic pains about the heart from some sudden excitement, *Gelsemium*.

Aneurism of the Aorta.

This is a rupture of some of the coats of the great artery, and which so weakens the rest that they lose their tenacity, and bulge out so as to impair its function. It often is very painful, and pulsates in a frightful manner. *Aconite*, *Bryonia*, *Digitalis*, *Zinc*, *Lachesis*, and *Rhus tox.* are remedies that may be consulted. Either will relieve, under certain conditions. The usual dose may be repeated every two hours.

Inflammation of the Arteries may be relieved by the persistent use of *Aconite*, and inflammation of the veins by *Phosphorus*, *Hamamelis*, or *Rhus tox.* Arteritis and Phlebitis are both formidable diseases, and require the attendance or care of a physician.

DISEASES OF THE URINARY ORGANS.

THE urinary apparatus includes the bladder and kidneys, and their appendages, all of which are subject to inflammation.

Inflammation of the Bladder. — *Cystitis.*

When urination becomes painful and difficult, and the orifice of the bladder seems to be insufficient for voiding the urine, we have indications of inflammation of the bladder; and also when there is frequent inclination to urinate, with ability to pass but little at a time. *Aconite* may be given at first if fever attend the difficulty; *Belladonna* might follow *Aconite* if there should be any congestion; *Cantharis*, however, is one of the best remedies, if there is tenesmus or straining. *Cannabis sativa*, also, is a good remedy, and with old people *Arsenicum* is often beneficial. It is well to drink mucilaginous drinks, and subsist mostly on gruel, until the severe symptoms subside. All this trouble may pass from the acute to the chronic form of the disease, and be an entailed difficulty. The best way to prevent it is to have the first acute stage well attended to. The frequent desire to urinate, which we sometimes find in aged persons, may be due to chronic inflammation of the neck of the bladder. *Sulphur*, given every night, may mitigate the disease materially; and so also a decided benefit may be gained from the use of *Conium maculatum*. The same diet found beneficial for the acute form of this disease will be found beneficial for the chronic.

Strangury.

This affection consists in being unable to void the urine, and is believed to be the result of inflammation of the neck of the bladder, or some mechanical pressure upon the urethra. It often proves to be quite painful, and attended with fever. *Aconite* may be given every hour when the skin is hot, dry, and feverish, or *Spirits of Camphor* in drop doses every twenty minutes until relieved. *Hyoscyamus*, if the stoppage appears to be unattended with fever; *Cantharis*, if there is an ineffectual urging to urinate; and *Cannabis*, also, when there is inability to evacuate the bladder. Dose and administration, four globules every hour.

Stone.

When one is voiding urine, and some obstacle to its passage suddenly interferes, and the stream is cut short, we may infer that a stone has interposed at the orifice of the bladder. The symptoms are like those of strangury. Oftentimes there is pain in passing urine, inclination to pass it often, and straining to keep the stream flowing. Against the ill effects of stone in the bladder, *Cantharis* or *Cannabis* are among the prominent remedies. *Lycopodium*, *Calcarea*, and *Phosphorus* are also good remedies. The two remedies first named may be given in drop doses every hour, and the three last only three times a day. The patient should drink soft water, and live upon a moderate non-medicinal diet, avoiding malt and distilled liquors as a beverage.

Gravel.

This is indicated by violent, cutting, intermittent pains in the region of one or the other hip and kidney, extending down the ureter to the groin or down the thigh, frequent but scanty urine, fever, and nausea. The most useful remedies, in the order of their importance, are *Uva ursi*, *Belladonna*, *Chamomilla*, and *Nitrum*, repeated often.

Retention of Urine.

This difficulty results from fever or some local irritation, and consists simply in disinclination to evacuate the bladder, not from inability on account of inflammation, or some obstruction, but because there is an irresistible proneness to retain the urinary secretion, either from nervous weakness or spasm of the neck of the bladder. The remedies found most useful are *Cina*, *Spigelia*, *Hyoscyamus*, *Belladonna*, and *Rhus tox.* Either of these may be given and repeated until the patient is relieved. *Hyoscyamus* and *Cina* are preferable. With old people, *Arsenicum* or *Secale.*

Suppression of Urine.

In some fevers the kidneys do not perform their office, and the urinary secretion is suppressed and thrown back upon the system; and, as a consequence, the blood fails of being defecated, and the result, in a short time, must prove quite disastrous. A dose of *Sulphur* may sometimes overcome this difficulty, and set the organs of secretion at work. *Baptisia*, *Nitrum*, *Pulsatilla*, *Bryonia*, *Rhus*, *Cantharis*, and any of the remedies that act specifically upon the renal region, will be likely to afford relief. The remedies may be repeated every two hours, and the diet should be mucilaginous drinks.

Incontinence of Urine.

Some persons cannot help urinating at once as soon as the bladder fills. Their incontinence becomes manifest when no opportunity offers for immediate resort to the water-closet, and in many instances becomes painfully mortifying, and renders the victim an object of sympathy. *Mercurius vivus* may be given in the usual dose, three times a day. If, after a trial of a few days, the patient is not improved, give *Opium*, *China*, *Calcarea*, *Causticum*, and *Sulphur* in the same way.

Wetting the Bed.—*Nocturnal Enuresis.*

Children addicted to this habit from some diseased condition may be cured by daily doses of *Sulphur*, or *Carbo animalis*, or perhaps *Silicea*, or *Causticum.*

But some children get the habit and become confirmed in it from no physical cause whatever; and, if no measures are taken to reform them, they will grow up under the impression that they cannot help it. The best way to treat such is to impress upon them that they can and must banish the habit. Let them be impressed even to shame and a threat of chastisement if they keep up the practice; and, in most cases, this is all that is necessary.

Diabetes. — *Immoderate Flow of Sweet Urine.*

There is no disease that resists more stubbornly the action of remedies than Diabetes. It consists in a copious secretion of sweet urine, that contains many grains of solid material passing away from the tissues every twenty-four hours. This disease will emaciate a fleshy subject in six weeks, and give him a pale and sickly look. The disease has been palliated, but never cured permanently that we find any record of; and yet *Phosphoric acid*, given three times a day, has diminished the amount of the secretion from twelve to two quarts in twenty-four hours; and apparently this remedy, with *Nitrate of uranium*, has effected temporary cures. *Muriatic acid*, *Sulphur*, and *Kali carb.* have also been esteemed as valuable remedies, all of which may be given in the usual doses, three times a day.

Bloody Urine.

As gravel is believed to be one of the causes of this difficulty, and inflammation of the bladder is believed to be another, the same remedies applicable to the one will serve for the other. *Arsenicum* may, however, be added to the remedies, particularly if there is any burning at the neck of the bladder and tenesmus.

Inflammation of the Kidneys.

When there is pain in the back, and increased flow of urine, and a desire to urinate frequently, and sometimes severe pain in the hip and side, nausea, vomiting, and fever, there is undoubtedly inflammation of the kidneys. In the treatment of this painful difficulty, we find *Arnica* the best remedy if the inflammation has been produced by a mechanical injury. If from a cold, *Rhus tox.* or *Nux vomica*. If there is much fever, *Aconite;* chilliness down the spine, *Belladonna*. When there is obstinate vomiting, *Bismuth*. The patient should lie in bed, and not try to exercise much till the inflammation passes off. The medicine should be given every hour or two hours, according to the severity of the inflammation.

DISEASES OF THE ORGANS OF GENERATION.

The organs of generation in the male are the penis, testes, and their appendages. Those of the female are the vulva, vagina, womb, ovaries, and their appendages.

Inflammation of the Urethra.

The urethra is the common passage through which the urine passes from the bladder, and the semen from the testes. When it becomes inflamed from cold, or as the sequel of some acute disease, *Pulsatilla*, *Cannabis*, *Mercurius viv.*, or *Sulphur* may cure the difficulty by being given every two or three hours. One remedy only must be given; if this fails, try another; but if the disease is the result of impure connection, and is the Gonorrhœa (or Clap), give *Cantharis*, and afterwards *Cannabis*. If there is painful smarting, give these remedies every hour in alternation until the discharge ceases. Give *Pulsatilla*, also, every hour, if the other remedies fail, and use a solution of *Hamamelis* in water as an injection.

Syphilis.

Nearly allied to Gonorrhœa is Syphilis; only the latter is a more formidable result of impure connection, which inoculates the blood. It becomes manifest in discharge from the urethra, chancres, buboes, etc. When there is a purulent discharge from the urethra, *Mercurius viv.* may be given persistently for several days, and this may arrest the further progress of the disease; but should it not, and chancres make their appearance on the prepuce or foreskin, or on the glans, burn them with *Nitric acid*, full strength of the stores, and then give *Mercurius corrosivus* every six hours for several days; dressing the sores with lint wet with cold water and *Calendula*. If the chancres heal, it is well and good; if they do not, give *Mercurius iodatus* three times a day. Let the patient avoid drinking any intoxicating beverage whatever, and abstain from all medicinal articles of diet.

Inflammation of the Testicles.

Sometimes a suppression of Gonorrhœa will cause inflammation and swelling of the testicles. Both may be implicated, and become exceedingly painful and enormously swollen. For the first stage before the swelling,

Aconite may be given every two hours to reduce the general febrile condition of the system. Afterwards *Arnica* may be given to remove the soreness, and *Pulsatilla* to remove the swelling. Either of these remedies may be given every day, three times, until the object for which they are given is accomplished. Let the patient lie in bed, and apply warm compresses to the part. Let him subsist upon a spare diet, and drink no exciting drinks. Let him wait with patience for a subsidence of the swelling and inflammation.

Dropsy of the Scrotum. — *Hydrocele.*

Sometimes inflammation of the testes will result in Hydrocele, and the scrotum will become filled with water. *Helleborus nig.*, *Apis mel.*, and *Arsenicum* are remedies that have been employed to cure the difficulty; but sometimes remedies prove unavailing, and the water has to be drawn off by a trochar, in which event consult an experienced surgeon. But try the remedies first, and give each named in succession (provided the first or second does not prove effectual), every three hours during the day.

Inflammation of the Vulva.

This may occur from acrid Leucorrhœa, or cold, or from Gonorrhœa; and, from whatever cause, it requires the application of warm water and compresses, and a dose of *Aconite* or *Belladonna* every hour until relieved.

Inflammation of the Vagina.

The vagina is lined by a mucous membrane, which sometimes becomes inflamed; and when from a cold, producing an ordinary catarrh, give *Nux vomica* or *Sulphur*, night and morning, until better. If from chronic irritation of the membrane there is a Leuchorrhœal discharge from the vagina, give *Sepia* night and morning. If this fails, give *Calcarea carb.*; and, if this fails, give *Sulphur* in the same way. Leucorrhœa may be occasioned by falling of the womb, which irritates the mucous membrane of the vagina, in which event *Sepia* or *Nux* may be given every night, with full prospect of a cure.

Inflammation of the Womb.

This painful malady is often the result of protracted labor, and is known by great thirst, pain over the region of the womb, and great tenderness of the touch. *Arsenicum*, given every three hours at first, and followed by *Belladonna*, generally proves successful; but *Bryonia* and *Rhus tox.* or *Verat. viride* may be resorted to, and repeated every three hours, if found necessary. Inflammation of the womb is a painful difficulty and a dangerous one, and should be treated with great care. Warm bran poultices, if the patient can bear them, may be applied while giving the remedies.

Falling of the Womb.

The womb is said to fall, when from debility, or a relaxed condition of its ligaments, it sinks down into the vagina; and this is indicated by pain in the back, and a dragging sensation over the hips, and bearing-down pains. These are often attended with headaches and other derangements, which must be considered. *Nux vomica*, every night, is one of the most valuable remedies for prolapsus uteri. *Sulphur* sometimes does well. *Sepia* every morning has often cured and relieved the headache, nausea, and other concomitant symptoms. *Calcarea* has relieved when the pain is most prominent about the hips; *Ignatia*, when the difficulty has been brought on by grief. Patients of this description should not drink coffee or strong green tea. Black tea, cocoa, and milk may be allowed, with a moderately generous diet.

Inflammation of the Ovaries

This difficulty is denoted by sharp pains, either in the right or left side, or both, just front of the upper edge of the hip-bone. It sometimes is very painful, and requires rest and the best treatment and nursing to subdue it. *Conium*, in daily doses, has relieved some; so has *Pulsatilla*, *Belladonna*, and *Ignatia*. Some remedies relieve for a time, such as *Bryonia* and *Rhus tox*. *Belladonna* will cure when the inflammation is attended with headache and considerable neuralgic pain in the region of the glands; if much fever attends the affection, give *Aconite* three or four times a day. Now, as all these affections disturb the nervous system, and give rise to various forms of nervous complaints, such remedies as *Pulsatilla*, *Ignatia*, *Hyoscyamus*, *Nux vomica*, *Moschus*, and *Caulophyllin* will be constantly needed, and stimulants need to be taken with great caution. Cold compresses in acute attacks.

Ulceration of the Womb.

Any thing that irritates the mouth of the womb may occasion, first, inflammation of the os tincæ, and then ulceration. Frequent miscarriages will so weaken the organ, and especially its ligaments, as to admit of its being easily misplaced, or turned backwards or forwards. These misplacements are often the cause of ulcerations, and almost always the source of weakening Leucorrhœa. The medical treatment of this difficulty is of the first importance. *Sulphur* every night may commence the treatment. If, after using the *Sulphur* for a week, the purulent discharge becomes less, and there is less pain and soreness in the region, and still considerable pain remaining in the back, give *Nux vomica* every night for a week. If these two remedies fail of bringing about a cure, then drop twenty drops of the tincture of *Calendula* (Marygold flowers) in half a tumbler of water, and inject it into the vagina every day, and at the same time take a dose of *Sepia* every morning. Continue this treatment as long as useful. *Calcarea*, taken every night, sometimes has a good effect. Local applications to the ulcers are sometimes made, but this is the business of the surgeon.

Leucorrhœa. — *Whites.*

When the mucous membrane lining the womb and vagina becomes irritated or inflamed, it undergoes solution, and there is a white discharge. This is of frequent occurrence, and in some instances is such a drain upon the system as to weaken the function and tone of the nutritive organs. Any treatment that will strengthen the whole system will generally cure the derangement. *China*, *Ferrum*, and *Aurum* are remedies that may be employed, either of which, in daily doses, will prove sufficient. In the mean time, let the patient refrain from over-exertion. A more aggravated form of Leucorrhœa attends falling of the womb, and this perhaps is the cause of the difficulty. The remedies which will best meet this difficulty are *Sepia* and *Calcarea carb.*; the former may be given every morning, and the latter every evening; or perhaps *Nux vomica* may be given in the evening, and *Calcarea* in the morning. If there is sick headache attending this form of Leucorrhœa, *Sepia* is still the remedy. If other biliary derangements, *Nux vomica* is equally applicable. Ladies afflicted with any of these uterine difficulties must not drink strong tea or coffee; but mild black tea, cocoa, and milk should be the chief beverages, and, if the appetite permit, a moderately generous, but non-medicinal diet may be added.

DISEASES OF THE SKIN.

Boils. — *Furunculi.*

These are small, circumscribed, and painful tumors, which begin in the form of a pimple, and then grow until they acquire the size of acorns. They are several days in coming to maturity; and sometimes their painfulness excites fever and chilliness, loss of appetite, and other derangements. When suppurating, the pain in them is intense and pulsating just before the crisis. As soon as they break, the pain diminishes, and very soon the injury is repaired. *Aconite* may be given two or three times a day to subdue any fever that may be present. *Belladonna* also will remove the pain of congestion; and this may be given several times during the day. *Arnica tincture* may be applied externally to remove the soreness, and with great advantage it may be taken internally; and in the same way *Hamamelis Virginica* may be employed. Wet a compress, and apply directly over the boils, and renew several times a day, and the pain will be very greatly diminished. Poultices, in case of very large boils, may prove of service, — bread and milk, or flaxseed; and, when employed, give at the same time *Hepar sulph.*, four globules, and repeat twice a day. *Arsenicum* often prevents their recurrence.

Carbuncle. — *Anthrax.*

The difference between a boil and a carbuncle is this: a boil is circumscribed, but a carbuncle travels, or moves along the subcutaneous tissue; and, when it breaks, it seems to have several openings instead of one as in the case of the boil. Anthrax is a troublesome disorder: sometimes it is attended with active inflammatory fever, and sometimes with low fever. It is far more common among old than young people, and sometimes very difficult of cure. A carbuncle upon the back of the neck, accompanied by fever, requires *Aconite* during the time of its development, and afterwards *Hepar sulphur.* The effect of this latter remedy is to hasten suppuration. *Phosphorus* is also employed to promote the same end. Bread and milk poultices may be employed; and a dressing of adhesive plaster, with apertures for the pus to discharge, may be applied after the poultice. The sore should be dressed every day; and, if very painful, compresses wet with *Hamamelis* may be resorted to. To remove great sore-

ness, *Arnica* may be used in the same way. Sometimes in aged people a carbuncle becomes gangrenous; and then *Arsenicum* should be employed, a dose every three hours. When the disease, or carbuncle, comes on the back, either to the right or left of the spine, it is liable to make its way downwards; and, in order to prevent its doing so to any extent, compresses bound tightly beneath may keep them where they begin. In all cases when there is active fever accompanying carbuncle, *Aconite* may be necessary; for, so long as there is great arterial excitement, it will tend towards the carbuncle and greatly augment its severity. If low fever, or a lassitude and stupor, attends the discrasia, give *Bryonia*, and repeat every three hours; or perhaps *Rhus tox.; Arsenicum*, if the pus is of an offensive smell. Carbuncles are supposed to originate from low conditions of the circulation, and therefore a generous diet is suggested. Avoid medicinal food and condiments, except salt. Animal food is most commended for a diet.

Abscesses.

Abscesses generally form in the subcutaneous tissue, but manifest themselves through the skin. Generally there is some protuberance or swelling upon the surface; sometimes there is none. Frequently there will be some redness, to indicate that an inflammatory process is going on; and, at other times, there will be no indication of the kind. An abscess, then, is simply a circumscribed collection of pus, formed from broken-down tissues or blood corpuscles. They are subject to medical treatment. *Calcarea*, for abscesses in scrofulous persons, may be given every day, and especially in cases of scrofulous children. Abscesses upon the arms or hands may be cured by the use of *Pulsatilla* or *Nux*. Abscesses on the face require *Bryonia* and *Calcarea;* abscesses from the bone require *Silicea*. Abscesses should be relieved of their pus by the lancet as soon as sufficiently ripe. They may be washed with *Calendula tincture*. Persons prone to suffer from abscesses should subsist upon a spare diet, and should avoid rich gravies or great quantities of butter. Bread, potatoes, beans and peas, beef and mutton, may constitute about the range of diet; and coffee, ale, cider, and distilled spirits must not be touched.

Corns.

The feet appear to be the only locality affected by corns; and they occur frequently upon the toes. A corn is simply hardened cuticle or skin, rendered so by some pressure or irritation upon the surface, such as a tight boot or shoe. Those who subject the feet to such treatment must suffer the consequences. The best treatment for a sore corn is to shave off the hard skin, and apply the tincture of *Arnica*, or perhaps the tincture of *Causticum*. It is said, however, that *Graphites*, *Silicea*, *Sulphur*, and *Antimonium crud.* are remedies that may be taken internally to cure corns. Either of the remedies may be taken in daily doses. A corn-salve is sometimes applied, made of pine pitch or diachylon. Any plaster that will protect the tender and irritated spot from the pressure of the boot will be found useful.

Ulcers.

Ulcers are included among skin-affections, because they break the continuity of the skin, and manifest themselves upon the surface. An ulcer is formed generally by the disorganizing influence of inflammation, which affects the membranes and skin. Ulceration of the soft parts, and ulceration of the stomach and intestines, are of frequent occurrence; and an ulcer is slow to heal, and constantly discharges pus. Ulcers of the legs, toes, feet, hands, and arms, are met with extensively. Ulcers of the lower extremities, or legs and feet, can be cured by a daily dose of *Silicea* or of *Sulphur*. Ulcers of the upper extremities, or the arms and hands, can be cured by daily doses of *Calcarea* and *Graphites*. Ulcers of the soft parts require *Phosphorus* or *China*. Ulceration of the stomach requires *Conium* or *Phosphorus*. Ulceration of the bowels requires *Arsenicum*. Each of these remedies may be given in daily doses, and continued as long as observation teaches their utility. Ulcerations are supposed to result from low states of the blood; and, therefore, stimulants must be employed to tone up the system. A generous diet is generally to be commended. There is no use in trying to heal over the surface of an ulcer; for, in so doing, it may work out deeper mischief in the economy. The only safe way is to build up the most healthy state of the system, and let the ulcer discharge itself, and heal from the bottom. Persons subject to ulcers are evidently scrofulous, or the victims of some other taint. If scrofulous, *Arsenicum*, *Silicea*, or *Calcarea* may benefit the condition. Ulcers arise also from hereditary syphilitic taint. *Mercurius viv.*, *Mercurius iodatus*, and *Mercurius corr.* are competent to eradicate this taint from the constitution; so is *Hepar sulph.* or *Nitric acid*. If the ulcers arise from this taint, alcoholic stimulants must be avoided, and the most generous meat diet must take their place. Whatever be the predisposing cause of ulceration known in a family, it should be carefully watched.

Chilblains.

Frosted feet, as this complaint is termed, occurs mostly in cold weather, and most frequently in persons susceptible from some constitutional taint. It has been observed that chilblains will assume the character of painful sores in those known to be of a scrofulous habit. The feet being very susceptible to cold, become chilled, and afterwards the heels, and sometimes the toes, become painfully tender. *Croton tig.* or *Arsenicum*, in the usual dose, may be administered twice a day, when there is burning heat and swelling; *Nux vomica*, in the same way, when attended with rheumatic pains. *Pulsatilla* is a better remedy for females of delicate constitution, and subject to colds. When the chilblains assume a bluish appearance, *Phosphorus* and *Sulphur* may be given; either of which, in the usual dose, may be given twice a day. Externally, the tincture of *Arnica* may be applied

to remove soreness. Tincture of *Cantharis*, if there is an inclination to blister; *Rhus tox.*, if they are red and inflamed. A solution of glue, in warm water, has been found a good palliative as a foot-bath.

Whitlow.

This is an inflammation and suppuration around the nails of the fingers; sometimes slight, and at other times exceedingly painful. *Hepar sulphur*, taken internally, will hasten to a crisis; *Graphites* or *Mercurius* is sometimes used for the same purpose; *Silicea* will hasten suppuration and a cure. *Rhus* or *Lachesis*, if the system is in a low condition. Either remedy may be administered twice in twenty-four hours.

Itch. — *Scabies.*

This cutaneous eruption consists of small pimples, or pustules, which make their appearance in clusters upon the skin, and itch and burn continually. They are believed to result from the acarus, or itch-mite, embedded in the cuticle. These pimples usually break out between the fingers, on the hands and wrists, and over the body. *Sulphur* has ever been found a salutary remedy, taken internally, and applied as an ointment daily. In many cases, *Calcarea*, *Hepar sulph.*, *Mercurius*, and *Rhus* have been found useful. For what is termed the Prairie Itch, which is very stubborn, *Mercurius viv.*, taken internally, and an ointment of the *red oxide of mercury*, used with care, externally, has proved effectual. *Sulphur ointment* has been in general use, and is of great service if used sparingly and with caution.

Itching of the Skin. — *Prurigo.*

Sometimes there will be intense itching of the skin, without any apparent eruption. Scratching or rubbing does not relieve; every attempt to relieve in this way aggravates the difficulty. There is no disease of the skin apparently more superficial, nor yet more annoying. As there is no prominent symptom but itching, we would naturally suppose that some single remedy would antidote it. But not so. In bilious temperaments, *Mercurius* is the best remedy. In sanguine temperaments, *Nux vomica*, or perhaps *Sulphur*. In the nervous, *Pulsatilla*, *Ignatia*, *Sepia*, *Calcarea*, and *Conium*. The remedy selected to meet the case may be given twice a day until relieved, unless there is found a necessity for change.

Ringworm. — *Herpes Circinnatus.*

This troublesome disorder usually manifests itself upon the face, and is at first a small circular eruption that enlarges in the form of a ring. The cause is believed to be a minute itch-mite, which lives in the skin,

and commits its circuitous mischief. Sometimes only one ring appears; at other times there are several, each enlarging its area until the face becomes nearly covered. A frequent cause of their appearing is by being shaved with a razor that communicates the infection. A strong tincture of *Hyoscyamus*, applied to the surface, will generally extinguish them; but there must be some constitutional predisposition that favors them; and therefore internal remedies must be employed. In case of syphilitic taint, daily doses of *Mercurius viv.* will be required. In those of strumous constitutions, *Calcarea*, *Arsenicum*, and *Sepia*. In those constitutionally inclined to erysipelas, *Rhus tox.*, *Dulcamara*, *Hepar sulphur*, and *Bryonia* will be found of use. Two or three doses of the remedy selected may be administered every day; and, at the same time, the *Hyoscyamus* tincture may be applied externally. This treatment has been found efficacious in most cases. A dilute tincture of *Cantharis*, applied locally, is a specific.

Hives.

Small red blotches upon the skin, that burn, itch, and sting, are usually called hives. They are believed to result from some derangement of nutrition, caused by certain articles of diet. But little danger attends the difficulty, unless, by exposure to cold, the eruption is made to recede, and it falls upon the bowels: this sometimes, in children, results in diarrhœa. *Pulsatilla* may be given in the usual dose, three or four times a day. In young children, who may be teething, *Chamomilla* will be found useful. If there is any nausea, give *Bryonia* or *Ipecac.*, and the derangement will be corrected very soon. *Croton tig.* is a fine general specific.

Varicose Veins.

The external veins upon the lower limbs sometimes become congested and enlarged, and are termed "varicose." Inflammation sometimes attends this difficulty, and terminates in varicose ulcers. The best remedy known for simple varicose veins is *Hamamelis Virg.* *Pulsatilla* is believed to be useful, and also *Lachesis*. Either of these remedies may be administered three times a day. The *Hamamelis* may be applied externally when administered internally. For varicose ulcers, *Arnica* may be given in the inflammatory stage, and *Hepar sulph.* after: when ulceration takes place, *Arsenicum* and *Carbo vegetabilis* may be called into use. A dose every day will hasten a cure.

Felons.

Felons commence at the bone, beneath the periosteum, or membrane that surrounds it. They are very painful, and most commonly make their appearance on the fingers or thumbs; at first a prickling sensation is experienced, as from a splinter, and then a sensation of heat attended with intense pain, depriving the sufferer of rest or sleep. The skin becomes changed in color at the surface, and there is painful throbbing and swelling. The most speedy cure for a felon is to thrust in the lancet to the bone, and give vent to the matter beneath the membrane; and, afterwards, an application of warm flaxseed poultices will keep the sore dis-

charging. Previous to lancing, resort has sometimes been had to soaking the part in hot water to which *Ammonia* has been added, to ripen, and prepare the way for the matter to come to the surface. *Hepar sulph.*, taken internally, exerts a beneficial influence in hastening suppuration. After a resort to the lancet is had, *Silicea* is a valuable remedy to hasten a cure. For the constitutional disturbance which felons excite, *Aconite* may be given to reduce arterial excitement; *Arnica*, to remove soreness; *Nux vomica*, to allay an irritable condition of the stomach; and *Sulphur*, to fortify the system against the recurrence of the difficulty. It is always well to keep the hand at rest until the pain and inflammation has subsided.

Tetter. Salt Rheum. — *Herpes.*

Tetter is an inflammatory disease of the skin, which, for the most part, appears upon exposed surfaces, — the hands and face, — though sometimes it comes on the arms and legs. It is a red, scaly, or burning eruption, very stubborn in its character, and painful. It sometimes becomes complicated with constitutional erysipelas, and causes swelling and infiltration of the cellular tissues around the eyes; affects the ears and nose; breaks out on the backs of the hands and arms, and in the bend of the elbow-joint, causing the skin to crack and become exceedingly sore. Sometimes the Tetter is dry, sometimes humid; and at others scaly. For dry, burning Tetter, *Arsenicum* is a valuable remedy. If there is feverish heat in the skin generally, *Aconite* and a lotion of tincture of *Aconite* may be applied externally. When the skin cracks and is dry, it may be anointed with the glycerole of *Aloes*. The burning may be somewhat allayed by applying, with a down-brush, a little rye-flour. *Sepia*, *Calcarea*, and *Dulcamara* are also valuable remedies for dry Tetter. The remedies, when selected, must be used persistently, two or three doses a day. For humid Tetter, *Rhus tox.*, *Conium*, and *Sulphur* may be employed. The *Rhus tox.* may be given first, and repeated every six hours. A lotion of twenty drops of the tincture in half a tumbler of water may be applied externally; and a similar preparation of *Conium* may be used externally when this remedy is administered internally. When humid Tetter smarts, and the skin is broken, cold cream may also be applied. For the scaly Tetter, *Calcarea carb.* may be given persistently three times a day; if this fails, *Sepia*, especially if the face is implicated. When the eyes or ears are affected and swollen *Rhus tox.* and *Belladonna* may be given alternately every three hours until better. In all cases of Tetter of the furfuraceous type, *Natrum muriaticum* may be found of service when other remedies fail. *Cantharis* is accounted a general specific. All persons afflicted with the disease should refrain from the use of salt provisions, pork, rich gravies, and the like; for these articles of diet heat the blood and augment the suffering.

Scrofula.

This disease shows itself in swelling of the glands, and sores upon the face, neck, and extremities. To rid the blood of this discrasia, *Arsenicum* may be given when there are sores or ulcers affecting the soft parts.

Sores around the mouth and upon the faces of scrofulous children may be cured with *Pulsatilla* or *Bryonia*. For swelling of the glands, give *Mercurius* three times a day; and, if there is a tendency to suppuration, give *Hepar sulph.* In some children of scrofulous taint, vaccination will bring out sores on the face, hands, and arms. This has been ascribed to impure vaccine matter; but this is not usually the case, as the best virus ever used will often be followed with this result; and, when it is, *Calcarea carb.* or *Silicea* may be given in daily doses, till the humor disappears. Ointments that simply drive these humors from the surface are pernicious, and often result in producing worse forms of the disease. Great care in reference to diet is necessary when these sores break out upon children. They should be fed mostly upon farinaceous food.

Eczema.

This is a disease of the skin, that may be brought on by working in smelting-furnaces, where the victims are all the time exposed to much heat, and are obliged to work among cinders and steam. The appearance of this skin-disease is that of red and inflamed spots covering the entire body. The biliary system seems to be much deranged, and nutritive system impaired. Persons thus affected become very much prostrated, and suffer intensely from the burning and smarting of the eruption. Almost any severe exercise that heats the blood of those usually forced to live upon an indifferent diet of unwholesome food will become subject to Eczema. To treat this difficulty successfully is, first to regulate the biliary system by three or four doses of *Nux vomica* or *Mercurius viv.*, for several days; and then follow with *Arsenicum*, *Tartar emetic*, *Petroleum*, or *Antimonium crudum*, three or four doses every day; and, as soon as the appetite and stomach will permit, furnish the patient with a generous diet, and let him change his employment for one of less exposure.

Liver Spots. — *Maculæ, Moss.*

This affection consists of discolored spots upon the skin of the face, sometimes covering the surface of the forehead with dark discolorations of the skin. Derangements of the liver are believed to be the cause; and, although these discolorations are not painful (except to the mind), they often mar the countenance, and annoy those smitten with these marks. They can be removed with appropriate remedies. *Sepia* is one of the most prominent. *Chelidonium*, given the same, is useful. A dose should be given morning and evening persistently, until the color fades and the spots disappear. To facilitate this, let the patient avoid coffee, milk, eggs, and all oily food. An animal diet, of the lean of well-fed beef and mutton, is preferable, with bread. Potatoes, and esculents of every kind, may be allowed; but gravy and much butter are pernicious; as are stimulants, such as malt liquors and highly seasoned soups.

Scurvy.

Persons so situated as to be obliged to subsist upon salt provisions are liable to become affected by a disease termed "Scurvy." It manifests

itself in scorbutic eruptions upon the skin, and by an inflamed and sore condition of the gums, which sometimes become so much affected as to cause the teeth to become loose. The want of fresh vegetables, or lemons, oranges, and other fruits, is believed to be sufficient to cause the difficulty. To cure the disorder, a wholesome diet must be provided, with plenty of fruit, fresh provisions, and vegetables. The only remedy necessary to carry off the difficulty, after providing the proper diet, is *Natrum muriaticum*, three doses a day, — morning, noon, and night. *Mercurius viv.*, *Nitric acid*, and *Muriatic acid* are also remedies that have been employed.

Barber's Itch. — *Sycosis Mentagra.*

This is exclusively a disease of the male sex, and occurs about the time the beard begins to grow thick and hard. The disease is supposed to be contracted by using bad soap upon the face, when shaving or washing the beard. A dull razor, that pulls and irritates the skin, may form the nucleus of the difficulty.. In laboring people, exposed to dust, especially of tobacco, and where there is not particular pains in washing out the dust frequently, the disease is likely to be generated. The disease resembles, in some degree, the herpes of the lips, makes its first appearance on the chin in small clusters of red pimples, or tubercles, each of which is perforated with a hair. These pimples increase in size and disgusting appearance, though not painful, until arrested by some remedial means. *Graphites*, in daily doses, has often cured. *Nitric acid*, also, twice a day, has proved efficient. *Aurum muriaticum*, alone, will cure cases in those having psoric or syphilitic taint. *Silicea*, *Carbo animalis*. *Hyoscyamus tincture* (externally), are also good remedies. *Nitric acid* may be applied in a diluted form, externally, and also *Sulphur ointment*. A solution of *Iodide of Potass.*, two grains to an ounce of water, applied several times daily, cures stubborn cases.

DISEASES OF THE HEAD.

Headache. — *Cephalagia.*

This affection is usually attendant on other difficulties, and must be treated with reference to the cause. If from cold, affecting the entire system, and accompanied by pains in the back, give *Nux vomica.* If from heat, or determination of blood to the head, *Belladonna.* If from chilliness, *Arsenicum.* For rheumatic Headache in cold, damp weather, *Bryonia.* For that produced by constipation, *Nux vomica.* Bilious, *Merc. viv.* Sick-headache, *Iris versicolor*, *Sepia*, *Pulsatilla*, or *Sulphur.* Nervous headache, *Coffea.* For headache caused by suppressed eruption, *Calcarea* or *Sulphur.* From suppression of the menses, *Pulsatilla.* From a fall, or fatigue, *Arnica.* From simple cold in the head, *Aconite.* A dose of four globules, of any remedy selected, may be repeated every four hours until relieved.

Vertigo, Swimming of the Head.

This uncomfortable feeling consists in a sensation of the head whirling around, causing one to stagger, and sometimes to fall. If from a deranged stomach, *Nux vomica.* If from a cold, *Gelseminum* or *Arsenicum.* From derangement of the biliary system, *Aconite*, *Pulsatilla*, or *Bryonia.* Vertigo produced by rush of blood to the head, *Aconite* or *Belladonna.* The remedy indicated may be repeated in the usual dose every two hours. For vertigo from riding in a carriage, *Cocculus.* From a shock or fall, *Arnica.* Dose and administration as above.

Ringworm of the Scalp.

This is a pustular eruption, that begins at one or more points upon the hairy scalp, and spreads sometimes so as to involve much of the surface. When there are a number, they spread until they coalesce and form a continuous eruption, from which exudes a greenish or sanious matter, that mats the hair, and renders the whole appearance of the head disgusting. Great care is required to keep the surface clean; and, for this purpose, no soap should be used. Water, softened by the white of a raw egg, is a better wash. *Calcarea* may be administered in the usual dose

every morning and evening. If this remedy does not prove efficient, give *Sulphur* in the same way, and also *Hepar sulph.*, or *Lycopodium*. The head may be, at the same time, washed once or twice a day with a lotion made of twenty drops of the tincture of *Sulphur* in a half-tumbler of water.

Scald-head. — *Tinea Capitis.*

This is also an eruption upon the scalp, that may be dry or humid. For the dry Scald-head, *Natrum muriaticum* or *Sulphur* may be administered twice or three times a day. For the humid Scald-head, *Lycopodium*, *Arsenicum*, *Conium*, or *Graphites* may be given twice a day. The same restriction as to the use of soap must be observed, and the same measures for cleansing may be recommended, as in the case of pustular Ringworm of the scalp.

Ulcers of the Scalp.

In scrofulous children, these ulcers sometimes occur in the form of small furunculi, or boils, exceedingly sore and painful. The best remedies are *Arsenicum*, *Hepar sulphur*, *Nitric acid*, and *Silicea*. They may be given as required in daily doses of four globules. The ulcers may be wet with *Hamamelis Virginica*, after having been pricked with the lancet.

Baldness.

When the hair falls from the head by reason of debility, the remedies to be given are *China* and *Ferrum;* when in consequence of perspiration, *Mercurius;* from the use of quinine, *Belladonna*, or *Pulsatilla;* if from the abuse of mercury, *Carbo vegeta.;* if from grief or trouble, *Phos. acid*. If Baldness occurs after protracted inflammatory diseases, and nervous and typhoid fevers, give *Calcarea* in daily doses or *Hepar sulph.* and *Silicea*. For Dandruff, give *Lycopodium*.

DISEASES OF THE BRAIN AND NERVES.

Brain Fever.

This disease comes on with more or less pain in the head, attended with heat and delirium; the eyes also exhibit a red or fiery appearance: and this pain, heat, and delirium are sometimes followed by drowsiness, and inclination to vomit. The pulse is usually rapid and feeble. In Brain Fever, there is loss of appetite, great restlessness, short, comatose naps, and frequent inclination to cry out with pain. *Aconite* is useful to commence with, and this may be followed with *Belladonna*. If respiration is hurried and labored, give *Arsenicum*. If Brain Fever is brought on by a fall, or a blow upon the head, give *Arnica;* and if no relief follows in twenty-four hours, *Glonoine*. If from trouble or grief, *Ignatia*. If from intoxicating drinks, *Nux vom*. If at the menstrual period, *Pulsatilla*. If from intense study, or close application to business, *Sulphur* and *Nux vomica*.

Rush of Blood to the Head.

The signs of this occurrence are intense headache or vertigo at first, which is followed by fainting, and often with loss of consciousness; at times there will be twitching and spasms. The difficulty may occur from various causes, and is common with females and those of nervous temperament. *Aconite*, in solution, may be put in the mouth of the patient, and also the head may be wet with cold water. The head should be laid a little lower than the body; the lower extremities should be rubbed, and friction should be applied to the arms and hands. *Belladonna* may be given after *Aconite*, or, in grave cases, *Glonoine*. If the rush of blood has been caused by running and getting heated, give *Arnica*, and bathe the temples with a solution of twenty or thirty drops in half a tumbler of water. If at the menstrual period, give *Pulsatilla*. In plethoric persons, exposed to the heat of the sun, give *Nux vomica*, and apply friction to the extremities. If in consequence of having drunk stimulating beverages, *Arsenicum* and *Nux vomica*. If from indigestion, *Pulsatilla*. If from fright, *Aconite*. If from exposure to winter cold, *Camphora*. The dose of any of the remedies selected may be repeated every fifteen minutes until the patient is better.

Sunstroke. — *Coup de Soleil.*

Protracted exposure to the heat of the sun will sometimes produce a sudden prostration of the nerves, and an intense headache, causing blindness, vertigo, and extreme sensitiveness to the glare of light, and sometimes a sudden chilliness and shuddering, extremely alarming. This is termed Sunstroke, and frequently is so intense as to prove fatal in a few hours. The remedies that have been found the most useful are *Glonoine*, *Belladonna*, *Phosphorus*. These may be given singly, and repeated, until relief is obtained, every thirty minutes. As soon as the patient recovers consciousness, give *China*, in the usual dose, several times a day; or, if there be disturbance of digestion and feeble voice, or entire loss of voice, *Antimonium crudum*. The patient, when convalescent, should be kept out of the sun, and away from strong light. After one has suffered from Sunstroke, it may be several weeks before he fully recovers. When it occurs in summer, his system will be exceedingly impressible to the sun's rays until cold weather, or until his nerves regain their normal vigor. Great care should be exercised in reference to the diet. For after treatment, *Lachesis* or *Nitric acid* often indicated.

Apoplexy. — *Apoplexia.*

This alarming disorder is the result of a sudden determination of the blood to the head, which produces a rupture of some one or more of the blood-vessels of the brain, and a hemorrhage in the nervous centre. When only the left side of the brain sustains this injury, the right, upper, and lower extremities are liable to paralysis. When the right is similarly affected, the left side usually becomes paralyzed. When both hemispheres of the brain become implicated in the hemorrhage, there usually occurs general paralysis, and the patient falls entirely senseless. There are premonitory symptoms of this disorder, which, if carefully heeded, may suggest a treatment that will ward off the difficulty. These symptoms are vertigo, fulness, and dull headache, and sometimes nose-bleed. When one feels an uncomfortable fulness of the head, under which he walks with an unsteady gait, he may find relief by one or two doses of *Aconite;* or if he finds this uncomfortable fulness takes the form of a dull, stupefying headache, *Belladonna* may be preferable, and is the leading remedy. If there is vertigo and fulness, with prostration, *Nux vomica* is indicated. In case of nose-bleed, give *Aconite*, *Bryonia*, or *Pulsatilla*. These preliminary symptoms may be made to disappear with these remedies, when otherwise they might augment until an apoplectic attack set in. Then is the period of danger. But few cases of sanguinary Apoplexy are cured; and yet some do recover. When the clot pressing upon the brain is of small size, and the hemorrhage comparatively light, an absorption of the clot may take place, and the patient recover; but, when the clot is too large to be disposed of by the process of absorption, it becomes an obstacle in the way of recovery: and yet active measures should in all cases be called into requisition. *Aconite* should be placed in the mouth, and the face should be bathed with it. The bowels should be moved by an enema, and cold applications, or rather applications of tepid water, should be made to the head.

Friction should be applied to the surface of the entire body and the extremities. *Belladonna* is also a remedy that may be administered if possible, and repeated every half-hour or hour. *Ignatia*, in persons of lymphatic temperament, may be given in the same way. *Arnica* may be administered internally and externally. The skin may be rubbed with it; the usual doses may be given every hour, by placing the globules in the mouth. If the attack follows the nose-bleed, and there is heavy or labored breathing, *Arsenicum* or *Pulsatilla* may be used. It is important to get an action on the bowels as soon as possible.

Epilepsy, Fits.

This disease is termed the Falling Sickness, as, without warning, the patient loses consciousness, and falls insensible to the ground or floor, with convulsive motion of the limbs, distortion of the muscles of the face, frothing at the mouth; and sometimes the mouth, lips, and jaws are spasmodically closed, the hands clinched, and a general rigidity of the muscles of the entire body. After a time, the rigidity passes off, and all the muscles become relaxed; the patient then appears to be in a deep slumber, and remains so for a longer or shorter period, and then awakes to consciousness, feeling wearied, but totally unaware of any thing unusual having occurred. Confirmed Epilepsy is rarely, if ever, cured. When the disease is not congenital, the incipient stage may be overcome. *Sulphur*, or *Calcarea carb.*, may be given when the first signs of the difficulty occur; and this may be followed with *Belladonna*, *Hyoscyamus*, or *Ignatia*. When Epilepsy is brought on by intemperance, its first signs may be attacked with *Nux vomica*, and the *sooner* the patient can be brought into a state of total abstinence the better. *Cuprum met.* may be given to this class of patients when there is pain in the head, and nausea, attending the incipient stage. *Opium*, when there is inclination to sopor, may be given every two hours. *Stramonium*, also, when there is deep sleep and loss of consciousness. When there is loss of memory following one of these falling or unconscious fits, give *Sulphur*, *China*, *Ferrum*, and *Nux vomica*, if all are required to effect a cure; the only hope for which is in preserving the patient in a condition for the curative action of the remedies. In all cases, between the attacks, no fat food should be eaten; but a simple, nutritious, and spare diet should be adhered to.

Acute Inflammation of the Spinal Cord.—*Myeletis.*

This is denoted by pain in the back, along the course of the spine, which also affects the spinal nerves, and results in general suffering of the trunk. When the cervical or neck portion of the cord is implicated, there is pain and stiffness of the neck, and pain in the back part of the head; and sometimes the accessory nerves become so affected as to produce derangement of the organs of speech and deglutition. *Aconite* is one of the remedies that must be employed to remove the inflammation when in this location. *Hypericum* is another; and this may be used internally and externally three times a day. *Verat. viride* is considered by some a specific remedy. When the dorsal portion

of the spinal cord is beset with inflammation, there is shortness of breath, dyspnœa, or fainting, and a sense of suffocation. There is, at the same time, pain in the back and chest, a rapid action of the heart. The spinal accessory nerves, that supply the intercostal muscles, partaking of the difficulty, renders the function of lungs, diaphragm, and heart, severally, impaired. *Aconite*, for the inflammation in this locality, may be given at first, and repeated every hour; and a lotion of twenty drops of the tincture in half a tumbler of water may be applied to the spine. *Belladonna* may be given when there is intense pain between the shoulder-blades. *Bryonia* is quite essential when every motion of the patient aggravates the suffering; *Conium*, when the pain is not so marked, but the respiration is difficult; *Cocculus*, also, when the pain in the back affects the stomach, producing nausea and prostration; *Pulsatilla*, when this occurs in young women or children, or in those of lymphatic temperaments. The patient should take but little exercise, if any. If only the lower portion of the spinal cord is affected, there will be pain in the small of the back. The secretion of the kidneys may be diminished or increased; the bladder, also, may be implicated. The womb may be subject to neuralgic pains; the nerves accessory may implicate the abdomen, and cause severe pains. *Nux vomica*, when the pain is the most prominent in the small of the back, and when there is pain in the bowels, and constipation. When the bladder is implicated, or spasmodically closed, *Hyoscyamus* is the remedy. When there is too great secretion of the urine, *Nux vom.* and *Sulphur* will obviate the difficulty. When this portion of the spinal cord is affected, the womb may become subject to neuralgic pains. *Belladonna*, *Cicuta*, *Ignatia*, and *Nux vom.* are all valuable remedies. *Conium*, to remove the inflammation of the cord, may be given every three hours, until the pain ceases. If spasms attend the difficulty, give *Hyoscyamus* every two hours, as long as they last, or else *Ignatia* or *Belladonna*. If the inflammation is brought on by a fall, or shock upon the nerves, give *Hypericum* every two hours, and bathe the back with a lotion of the tincture, forty drops in half a tumbler of water. *Bryonia* is also good for inflammation of the cord in the lumbar region, and especially when motion augments the suffering. The diet for all persons having the nervous centres implicated must be simple and nutritious.

Paralysis, Palsy.

When the whole muscular system becomes so feeble and trembling as to be no longer controlled by the will, it is a case of Palsy; and this is brought on by some trouble in the nervous centres. It attends Apoplexy, Epilepsy, and other affections incident to the nervous centres. Inflammation of the Spinal Cord will often produce the affection. The palsy may affect only one hand or one cheek; or it may be more general, and all the muscles may be smitten with paralytic weakness. *Belladonna* is often indicated for right-sided paralysis, and is, perhaps, the best remedy, in the majority of cases. *Pulsatilla* is one of the best remedies for this disorder: give a dose of it three times a day. If this does not cure, give *Cocculus*, in the same way, or *Nux vomica*, *China*, or *Ignatia*. For palsy of the tongue, give *Calcarea;* for palsy of the face, *Pulsatilla;* for palsy of the arms and legs, give *Mercurius*

viv., *Nux vomica*, *Pulsatilla*, and *Bryonia*. If the palsy is the result of a shock or fall, give *Arnica*. If great weakness and slow fever, give *Rhus tox.* Strong tea and coffee are not advisable beverages for those threatened with Palsy Water, milk, and black tea of moderate strength, may be allowed.

Lockjaw, Trismus.

One of the most painful affections that can assail human nature is the shock upon the nervous system produced by a wound. *Lockjaw* is a rigid stiffness of the muscles of the jaws, by some irritation from a wound being first sent to the brain, and thence, by some nervous channel, to the muscles that control the jaws; causing them to assume a painfully rigid hardness, closing them beyond the possibility of opening them. Pain oftentimes is felt in other muscles, at the same time causing them to be rigid. One of the common resorts to control Traumatic Fever, or the fever produced by a wound, is brandy or whiskey. It is said that large drafts of either will have no intoxicating effect when this fever is present. *Tincture of Opium*, *Black Drop*, and *Opium* itself, have been given to antidote it, and sometimes with success. One of the best remedies for Traumatic Fever, or that produced by a wound, is *Arnica*. It may be given every hour or two hours, internally; or applied, in the full strength of the tincture, to the wound. There can be no other remedy more likely to produce pleasant results, unless from actual injury of some nerve, *Hypericum* is made to take the place of *Arnica*. If the patient is nourished through a quill, and the circulation is made vigorous by stimulants, and the intensity of the pain is kept under by anodynes, the remedial effects of *Arnica* and *Hypericum* may cure. *Lachesis* has benefited some cases.

Tetanus.

This is the general disease of which the foregoing is a part. A wound either in the ball of the foot or palm of the hand may so forcibly transfer its irritability to the brain, that the brain distributes the effect to the whole system, producing that most painful of all mortal sufferings, — the Lockjaw, or general Tetanus. *Belladonna*, *Nux vomica*, *Ignatia*, *Mercurius viv.*, and *Sulphur* may be employed in the general form of the disease, in addition to the treatment for Lockjaw.

Delirium Tremens.

This disease is the sequel of persistent inebriation. When a man forgets the extremity to which his appetite may lead, and keeps his nervous system excited even to intoxication, after a while his stomach will lose its tone, and become extremely irritable; his system, consequently, gains but little support from food: and, what is still worse, his strength leaves him; his mind, operated upon by his weakened nerves, is filled with fancies, and he is unable to sleep. Even before he becomes delirious, he has what in common parlance is termed "the horrors," which seem to be a wretched nervous agitation, and fearful foreboding of trouble. Finally,

the mind becomes so unsettled as to be totally deranged. Illusory pictures present themselves continually; such as serpents and other reptiles, with other hideous sights too numerous to particularize. Unless some remedial measures are made available in procuring sleep, his life in this world will soon terminate. *Bryonia* once cured a case of Delirium Tremens in an army officer, who, in delirium, had passed eight successive nights without sleep. *Nux vomica* will often quiet the nerves, and bring about a cure. *Opium* is a valuable remedy, and, in massive doses, has been employed for many years. *Arsenicum* is a valuable remedy to allay the irritability of the stomach; *Ignatia*, also, when there is much inclination to weep. The dose of any of the remedies may be four globules, or from one to five drops of the dilution in a spoonful of water; repeated at intervals of one or two hours. As soon as the patient can eat, give him the lightest kind of food, gradually increasing its strength until he is able to take full meals.

Neuralgia.

This disease is a simple pain in the nerves, and manifests itself in various parts of the body,—most frequently in the face; and may be caused by decayed teeth, or any weakening influence, such as loss of blood, diarrhœa, or dysentery. A torpid liver or feeble digestion may be the source of the pain. It is usually a stubborn disease, and proves in some cases an agony of suffering for years. It accompanies spinal irritation. It often follows miscarriages in females, and is too frequently an accompaniment of other female diseases. When diseased teeth are evidently the cause, *Arsenicum* or *Belladonna* may afford relief; or else let the tooth or teeth be extracted. If from extreme debility, *China* and *Arsenicum*. *Chamomilla*, when there is a flushed face, and much restlessness and extreme inquietude. *Conium*, when it accompanies spinal irritation. *Sepia* and *Calcarea*, when dependent upon uterine derangement. For Neuralgia of the stomach and bowels, give *Cocculus*, *Ignatia*, or *Pulsatilla*. That which occurs after miscarriage, dysentery, or diarrhœa, requires *China*, *Ferrum*, *Nitric Acid*, or *Sulphur*.

St. Vitus's Dance, Chorea.

A debilitated condition of the nervous system may show itself in involuntary twitchings of the muscles of the face, extreme restlessness of the limbs, involuntary movements of the hands, arms, and the entire body. *Nux vomica*, *Ignatia*, and *Cocculus* are remedies that will cure a majority of cases. *China* is best for debilitated persons; *Belladonna*, for those of nervous temperament; *Sulphur*, when there has been suppressed eruption. One remedy should be selected and tried first, and repeated every three hours until the patient is better; or, in case of no change, select another, and so on. Children afflicted with Chorea should not be confined in school, or be tasked with studies.

Stammering.

This is but another form of Chorea, affecting the organs of speech. *Belladonna*, *Sulphur*, *Hyoscyamus*, and *Causticum* have been employed against this difficulty, and with success. The training of young boys or girls addicted to stammering, to be deliberate in their efforts to express themselves, will often accomplish more than remedies. It is remarked that stammerers can sing, or utter any sentence in song. This would indicate the propriety of enjoining upon all thus affected to practise slow and deliberate speech. *Cuprum met.* is a remedy that has cured many cases; and so has *Ferrum*, *Ignatia*, and *Belladonna*. Employ each remedy singly, and repeat every three hours.

Loss of Memory.

Forgetfulness may be the result of nervous disease, as well as of heedlessness. Great and debilitating losses often impair the memory; so does a resort to *Opium* to destroy pain. Excesses of any kind may result in this difficulty. The remedies that have been employed are *Phosphoric acid*, *Sulphur*, *Nux vomica*, and *Ignatia*. Of the remedy selected, prepare twenty drops in half a tumbler of water, and give a tablespoonful twice a day.

DIPHTHERIA.

AN exudative inflammation of the throat, during the progress of which a dirty, grayish membrane is exuded upon the tonsils, and often upon the pharynx and posterior nares. The disease is commonly ushered in by the following symptoms: chilliness, headache, pains in the back and limbs, excessive prostration, fever, some difficulty in swallowing, though not always, and offensive breath. Later appear acrid running from the nostrils, or bleeding, as rather an unfavorable indication; swelling of the external throat; and sometimes, in very severe cases, vomiting or hoarseness, and other indications that the disease is invading the larynx or trachea.

This disease is now almost universally considered in some degree contagious, and for this reason the patient should be, so far as possible, isolated from those who are not in charge of the case. All his excreta should be disinfected with a strong solution of Sulphate of Iron *at once*. The room should be well aired constantly. The throat should be gargled, to prevent decomposition, with glycerine and water mixed, one part of glycerine to seven of water, to be used every two hours, or oftener in severe cases. Small pieces of ice allowed to dissolve in the mouth have a favorable influence. The patient's strength should be sustained by nourishing liquid food, such as broth of beef, lamb, mutton, or fowl; milk, or milk and raw egg; oatmeal gruel; oysters, in cold weather, are allowable. Stimulants are not recommended, except as a gargle, as much as formerly; though in severe cases, with alarming sinking of vitality, brandy in small doses may do good, when repeated often.

Dangerous symptoms have resulted from the patient being allowed to sit up too soon. The membrane should begin to disappear on or before the fifth day, else grave symptoms may be apprehended, such as delirium, epistaxis, vomiting, croup, or paralysis of the heart. The urine should be watched carefully, as albuminuria is generally present in a mild form, and sometimes complicates convalescence, inducing dropsical swellings, etc.

In severe cases the patient should exercise care against a relapse for at least three months.

Be sure that your house is properly drained. *Local filth* is the most common exciting cause of this dreaded and fatal disease.

For the benefit of those who cannot secure the advice of a competent physician in this grave disease, the following brief but trustworthy indications for its treatment are given: —

For the premonitory symptoms, such as chilliness, flushed face, headache, backache, and fever, *Gelsemium*, ten drops in half a tumblerful of water, a teaspoonful every half-hour until the fever subsides. Should there be no improvement in twelve hours, give *Cimicifuga* in the same way. This remedy has proved of great service in the hands of physicians of both schools. For the throat symptoms, the most frequently indicated remedies are the several preparations of *Mercurius*, the *Mercurius biniod.* taking preference, in water, and repeated hourly. This, or the *Mercurius cyanuretum*, may be alternated with *Cimicifuga*, or *Gelsemium*, or, later, in obstinate continuance of the membranous exudate, with *Phytolacca decandra*. When the breath is very putrid early in the attack, and the membrane offensive, with fever, darkly flushed face, delirium, *Baptisia* is better than *Gelsemium*, or any other remedy. Should the tonsils swell rapidly, and the throat and external face have a puffy appearance, *Apis mel.* is indicated, in place of the mercurial preparations. It should be given in water, hourly. Should croupous symptoms begin, indicated by

hoarseness, whistling breathing, dusky complexion, or doughy pallor, croupy cough, *Spongia* or *Iodium* will be the main reliance, together with the inhalations of the vapor of boiling water. *Lachesis* has saved cases of a grave type, which have resisted the before-mentioned remedies. When bleeding from the nose becomes troublesome and alarming, the best remedy is *Carbo Veg.*, together with a free local use of ice. The remedies should not be changed oftener than once in twelve hours, as it is a disease slow to show improvement.

Homœopathic Treatment of Diphtheria.

Two views have been taken with regard to the intimate nature and cause of diphtheria. Most physicians regard it as an essential fever, and are of the opinion that the local affections of the throat and air passages are secondary, and are but local manifestations of the special condition of the system, and that they have the same relation that the local affection of the skin and mucous membranes have to the eruptive fevers. They, however, admit that the general disorder is increased and intensified by the absorption of the septic matters of the local disorder, thereby producing the blood poisoning of septicæmia.

The other view is what is called the germ theory. According to this view, the disease is caused by a vegetable organization, which naturalists call spherobacteria or micrococci, which, finding access to the throat through the nostrils and the mouth, fasten upon the mucous membranes of the tonsils and fauces, and produce an inflammation which is characterized by the effusion of a fibrinous exudation called diphtherite. This is not all: under the conditions favorable for their life and growth they possess an enormous power of reproduction. From this centre of infection these germs find their way into the different tissues of the body, and acting as ferments, give rise to deleterious chemical products which destroy life. These vegetable parasites, according to this theory, are as inseparable from the diphtheritic process as the bacteria of decomposition are from putrefaction and decay. Without bacteria there can be no diphtheria. In grave cases, these parasites are found everywhere, in the smallest patches of membrane, and in immense numbers in the different tissues of the body. They are the cause of embolism, of metastatic abscess, and the intensity of the disease increases with their number. These are the theories of diphtheria.

The duration of the disease depends upon its severity. The period of incubation occupies from two to eight days. In mild cases the membrane commences to be shed on the fourth day ; in severe cases not before the tenth or twelfth day, and it may take four or more days to finish it.

The membrane is detached in the same way as any slough or necrotic tissue, by the process of suppuration. Whatever theory is adopted, the local treatment is of primary and equal importance ; for the mucous membrane of the throat, if it is the avenue through which germs find entrance to the body, is also the generator of those irritant poisons, the absorption of which contaminates the system and destroys life. No specific has as yet been discovered for this disease The object of the treatment is first, to put a stop to the spread of the disease, and to bring about a retrogression of the inflammatory process, with the removal of the membrane ; secondly, by the most perfect disinfection and antiseptic cleansing of the mouth and throat, to prevent the absorption of injurious products of decomposition from the surfaces of the diseased tissues.

In order to accomplish the above results, the local treatment by the application of disinfectant and antiseptic remedies is now in vogue.

Cauterizing substances are considered hurtful, and but seldom used. The most common remedies now resorted to are carbolic acid, salicylic acid, permanganate of potash, choral hydrate, sulphite of soda, benzoate of soda, and chlorate of potash. These various substances have been applied in solution by means of a sponge or a brush, in the form of spray, and in the form of a powder, taken dry into the mouth combined with sugar.

I think that the best way to treat the throat is by the frequent inhalation of a hot steam, applied in hourly sittings of about fifteen minutes' duration. These may be medicated with chloride of sodium, or the chlorate of potash, about twenty grains to the ounce. Such fluids, steadily flowing over the surfaces of the mucous membranes, wash away masses of mucus, remnants of food, and other products of decomposition. They assist nature's work of promoting suppuration, which is the legitimate way in which these pseudo-membranes are shed; and by combining this treatment with the use of strong gargles, composed of the solution of any of the above disinfecting substances, we more completely prevent septic absorption than by any other treatment ever used. The steam may be generated in any ordinary kettle, and conducted to the patient's mouth through any suitable tube. The general treatment of the patient is, as in every other infectious disease, to be sustaining.

Tonics, such as sulphate of quinine and the tincture of the muriate of iron, are also always indicated.

It has been claimed that alcohol conjoined with quinine, given freely from the first, is an effective curative agent. Alimentation is an essential part of the treatment. The diet should be highly nutritious; milk and animal broths are of this class.

Patients affected with this disease should be at once isolated. Thorough disinfection of the dejections, and of all articles which have been in contact with patients, and of the apartments which they have occupied, is to be recommended, and all defects of drainage must be remedied.

Relapsing Fever.

A fever has lately made its appearance in some of our large cities, having all the characteristics of a common typhoid, that apparently passes through all its stages, and then reproduces itself, and the same round occurs again. Each siege lasts about seven days. Several of these in succession make the condition of the patient precarious, and the prognosis unfavorable. The treatment is with stimulants, and the usual remedies for low fevers, such as *Ars.*, *Carbo vegetabilis*, *Bryonia*, and *Rhus tox.* Doses as usual, and repetition of the remedy selected every three hours. A stimulating diet always required.

Black Tongue.

In warm climates and in a low country, there are biliary derangements, accompanied with low fever, and a black coating upon the tongue. This is what is termed the Black Tongue. *Carbo veg.* has been given freely, even the crude powder, a teaspoonful at a dose.

Black Vomit.

This is another bilious disease, that results from superabundance of carbon in the blood, and a wretched derangement of the liver and stomach, which

causes copious vomitings of black bile. *Arsenicum*, given every hour, has remedied this difficulty. After the vomiting is arrested by the use of *Arsenicum*, give *Carbo veg.*, *China*, *Rhus*, or *Bryonia* Whichever remedy is selected by the indications should be repeated every hour or two hours, until complete recovery takes place As soon as the patient can take nourishment, give beef-tea and other nourishing soups, and then more solid aliments.

Nightmare. — *Incubus.*

The characteristic symptoms of this distressing condition are semi-consciousness, and a sense of inability to extricate one's self from some imaginary weight or seizure. It may be caused by some defect in the circulation, or indigestion. The sufferer is generally supposed to be asleep; but in some cases, he knows when persons are about him, and yet, unless he is spoken to or moved, or by effort himself can voluntarily move his foot or hand, he is liable to remain spell-bound, under a sense of weight or oppression. To relieve one when thus affected, turn or shake him. The remedies that may be employed to prevent Nightmare are *Aconite*, when there is a feverish condition of the system; *Nux vomica*, when there is indigestion; and also *Pulsatilla* and *Sulphur*.

Hysteria.

This is a name applied to a great variety of nervous derangements, that for the most part are dependent upon nervous debility. It may manifest itself in an irresistible inclination to weep or laugh; sometimes in fainting and spasms, shortness of breath, screeching, and a sensation of choking. *Aconite* will sometimes quiet the nerves; *Ignatia*, if there is an inclination to weep; *Hyoscyamus*, if inclined to laugh; *Pulsatilla*, if connected with the menstrual period. For hysteric mania, *Hyoscyamus*, *Stramonium*, or *Belladonna*. Either of the remedies may be given in the usual dose, and repeated every two or three hours until relief is obtained; and it is also recommended that such persons ride out in the open air, and seek change of scene.

Hydrophobia. — *Rabies.*

The bite of rabid dogs is productive of this disease. The poison communicated by the bite may remain in the system for an indefinite period; and then all at once, the sight of water or some polished metal will throw the victim into indescribable distress and madness, which are apt to increase and terminate in death. A *dread of water* is an unmistakable sign of the disease. When one is bitten by a rabid animal, the effect may be extinguished by an immediate resort to cauterization. A heated poker brought as near to the wound as possible without contact is believed to be effectual in destroying the poison; or the application of *Nitrate of Silver* immediately may also have the same effect. Hydrophobia has been cured by the persistent use of *Belladonna* in the usual dose, repeated every hour or two hours for several days; *Hyoscyamus* may also be employed in the same way; *Cantharis* has been recommended as an antidote to Rabies. *Lachesis*, and even copious draughts of whiskey, have been found useful Nothing, however, has been found more salutary as an immediate resort than dry or radiating heat.

DISEASES OF THE EYE AND LIDS.

Stye.

This is a small tumor on the lid, about the size of a pea, which is quite painful. *Aconite* will often cure in a day; *Pulsatilla*, also, affords speedy relief; *Belladonna*, when the inflammation of the stye causes redness of the eyeballs; *Staph.* prevents their recurrence, taken once daily awhile.

Inflammation of the Eyelids.

When the entire lids become involved in acute inflammation, *Aconite*, in the usual dose, may be given every two hours until relieved; *Puls.*, the same way, when there is burning, with flow of tears. If the lids become congested, red, and swollen, give *Belladonna*. If the inflammation is chronic, give *Calcarea* once a day, or else *Sulphur* or *Hepar sulphur*. If dependent upon gastric or bilious derangement, give *Nux vomica* or *Mercurius* every two hours until relieved, the latter especially when there are cutting pains, worse nights.

Iritis, Inflammation of the Iris.

The little circle in the front of the eyeball, which we call the Iris, is subject to inflammation. It may result from a cold, or from injury, or from some impurity of the blood. When from a cold, *Aconite* speedily affords relief. If very painful, *Belladonna*. If from injury, *Arnica* or *Aconite*. The patient must be kept in a dark room until the inflammation passes off. To relieve acute pain, resort has been had to *Morphine*, in one eighth of grain doses, repeated every four hours if necessary. It is doubtful if any external applications in Iritis ever prove beneficial. If any are used, none are better than water in which six grains of *Opium* to a gill has been boiled.

Scrofulous Sore Eyes.

In persons of a strumous constitution, a cold, or any undue exposure of the eyes, may cause them to be the seat of scrofulous inflammation; in which event, there will be a redness of the eyeballs, and swelling and ulceration of the lids, and a greater or less accumulation of matter beneath the lids. This disease is often very painful, and destructive to the coats of the eye; and, what is worse, it becomes the fruitful source of

cataract and blindness. When the eyes first become inflamed and burning, *Arsenicum* may be given; when the lids are implicated, give *Calcarea;* when the inflammation passes off, leaving white spots on the cornea, give *Sulphur*, *Hepar sulphur*, or *Conium*. Daily doses of the remedy selected will be sufficient.

Syphilitic Sore Eyes.

Sometimes syphilis will affect the eyes, and threaten the destruction of sight. The lids will inflame; the cornea will be congested, and of a bluish red; the conjunctiva will become the seat of inflammation, and sometimes of ulceration. *Mercurius iod.* may be given first, while the patient is kept in a quiet and darkly illuminated room, two doses daily. If the patient has already been treated with *Mercurius*, give *Nitric acid* or *Hepar sulph.* If considerable matter exudes from under the lids, give *Aurum* once a day; and if the eyes itch continually, give *Sulphur*.

Cataract.

This film, that obstructs the sight of the eye, is undoubtedly the sequel of scrofulous inflammation, or injury of the crystalline lens. It is simply an abnormal growth of a film over the pupil of the eye, partially if not wholly obstructing the sight. *Conium mac.*, given twice a day. *Merc. iod.* is also a good remedy; *Phosphorus*, *Causticum*, or *Sulphur* may be indicated. Either may be repeated twice a day when selected.

Rheumatic Sore Eyes.

Rheumatism of an inflammatory character may fall with great force upon the eyes, and produce severe pain and temporary blindness. *Nux vom.*, *Belladonna*, *Bryonia*, and *Aconite*, are remedies that may be consulted. *Bryonia* may be given three times a day, when every effort to open the eyes is attended with pain; *Belladonna*, when the pain is such as to give the sensation of the eyeball being too large for the socket; and also when there is a feeling as if the eyeball would burst. *Sulphur*, for dull pain in the eyeballs, and the sight impaired. *Rhus* when the eyes are pink, and lame on moving them.

Gonorrhœal Sore Eyes.

When the eyes become inoculated with gonorrhœal matter, there will be smarting, and then inflammation and swelling of the lids, and such serious infiltration as to close the eyes; and, in a very brief period, a perfect disorganization of the texture of the eye will take place. As soon as the character of the inflammation becomes known, it is well to make some compresses of linen a half-inch thick, and bind them tightly over the eyes, and then give *Cannabis* every three hours for two or three days; afterwards, give *Cantharis* in the same way; and, after the smarting pain begins to cease, carefully remove the compress, keep the patient in a dark room, and *Sulphur*, in daily doses, may complete the cure.

Specks on the Cornea.

Little opaque spots on the cornea may be left after scrofulous inflammation has passed away. These may be removed by daily doses of *Sulphur* or *Euphrasia*.

Watery Eyes.

When the eyes are watery, or prone to become so, from slight exposure to wind or cold, the difficulty may be obviated with daily doses of *Pulsatilla*, *Mercurius vivus*, or *Lachesis*. Blood-shot eyes will be relieved by daily doses of *Euphrasia*.

Squinting, Strabismus.

What is termed *cross-eyed* in persons is usually the sequel of some cerebral disturbances, that have deranged the normal action of the little muscles that regulate the position of the eyeballs, and give them an abnormal or squinting appearance. Sometimes daily doses of *Hyoscyamus* or *Belladonna* will entirely remedy the difficulty. SHORT-SIGHTEDNESS may be remedied by daily doses of *Sulphur*, *Lycopodium*, or *Pulsatilla*.

Inflammation of the Ear.

When there is inflammation and swelling of the external ear, and it has a red and fiery appearance, *Pulsatilla* may be administered twice a day. If the swelling and inflammation extend within, so as to close the external orifice, give *Belladonna* twice a day until the difficulty passes away. If suppuration threaten, *Hepar sulph.*

Earache.

This may result from cold, or from gatherings within the ear; or it may possibly be neuralgia, or proceed from decayed teeth; or, in children, from teething. When from cold, give *Chamomilla* or *Dulcamara* three times a day; if from injury, *Hypericum* or *Arnica;* if from gatherings, *Hepar sulph.* or *Calcarea;* if from decayed teeth, *Mercurius viv.;* if in teething children, *Pulsatilla*, two doses a day; if the pain is neuralgic, give *Nux vomica* or *Belladonna.*

Running of the Ears.—*Ottorrhœa.*

Ottorrhœa may be occasioned by a cold, when there are no sores. For this, give *Pulsatilla;* when from sores in the ears, *Calcarea.* If this should fail of cure, try, in succession, *Sulphur*, *Mercurius viv.*, and *Silicea.*

Deafness, Hardness of Hearing.

To remedy this difficulty when produced by a cold, give *Nux vomica* every night until relieved. For that which occurs after scarlet fever, *Calcarea*, and for that after measles, give *Pulsatilla;* from hardened wax, *Sulphur;* if from rush of blood to the head, or congestion, *Aconite* or *Belladonna; Causticum*, if these fail. The remedies may be repeated every four hours until relieved.

Nervous Deafness.

When the nerves of the ear lose their vitality, and Deafness results as the consequence, *Phosphoric acid* may be given, in drop doses, twice a day; or *Sulphur* may be given every night, or *Nux vomica*, or *Causticum*, in like manner. When Deafness occurs from Rheumatism, *Pulsatilla* may be given three times a day. *Arsenicum*, *Nitric acid*, *Calcarea*, and *Mercurius viv.* may likewise be consulted. If Deafness occurs from suppressed eruption, the remedies are *Sulphur*, *Calcarea*, *Graphites*, or *Causticum*, in daily doses. If Deafness is the sequel of malarious fevers, *Phosphorus* or *Phosphoric acid*, in daily doses; if from sudden check of nose-bleed, or discharges from the nose or ears, *Hepar sulphur*, or *Lachesis;* if from enlargement of the tonsils, *Nitric acid*, *Mercurius*, or *Aurum.*

DISORDERS OF THE NOSE.

Nose-bleed.—*Epastaxis.*

This trouble arises from various causes, and must be treated accordingly. When it arises from arterial excitement, *Aconite;* from an injury, *Arnica;* from rush of blood to the head, *Belladonna;* if from inflammation of the lungs, *Bryonia;* in typhoid fever, *Rhus tox.;* if caused by worms, *Cina* or *Spigelia;* if from weakness or debility, *China*, or *Carbo veg.;* if from cold, or coryza, *Nux vomica.* Dose, three times a day.

Obstruction of the Nose.—*Ozœna.*

Ozœna is an entire obstruction of the nasal ducts, from thickening of the mucous membrane, or other causes. If from accumulation of the mucus, *Pulsatilla;* if from suppressed eruption, *Sulphur*, *Lycopodium*, and *Calcarea;* if from scorbutic tendency, *Bryonia;* if with dry crusts, *Aurum.* The usual dose, three times a day.

Polypus of the Nose.

Not unfrequently, a morbid growth attached to the mucous membrane of the nose will fill the entire nostril. This is termed a Polypus, and is perfectly curable. *Calcarea*, when the disease appears in scrofulous subjects; *Sanguinaria*, when a cold has been the exciting cause; *Sepia*, when there is pain in the head and nausea; and *Staphysagria*, when it is the sequel of other disorders. The medicines may be given in the usual dose, and repeated every four hours.

DROPSIES, HYDROPS.

A GENERAL swelling of the whole exterior surface of the body, and a sensation of weakness, is termed General Dropsy, because the water infiltrates into the cellular or subcutaneous tissue all over the body. Local dropsies may affect the chest, abdomen, head, womb, and testes.

General Dropsy, Anasarca.

This is caused by Cellulitis and infiltration of water into the areolar tissue, causing one to swell all over the body. There is generally some thirst and fever that ushers in General Dropsy. *Arsenicum* in the usual dose may cure the disease when it seems to arise from a low state of the system. When it is the sequel of Scarlatina or Erysipelas, give *Helleborus nig.* three times a day. If after a Bilious Fever, give *Mercurius viv.* Following Scarlet Fever, *Apis*, or *Terebinth.*

Dropsy of the Belly.—*Ascites.*

When inflammation of the peritoneum terminates in Dropsy of the Abdomen, *Apis melifica* may be given, every three or four hours, for several days. If it fails of effecting a cure, *Apocynum* may be given, in the same way, and in like manner, *Bryonia*, *Helleborus nig.*, and *Arsenicum.* Tapping is sometimes necessary, when the peritoneal sack is filled with water, and dees not yield to remedies.

Dropsy of the Chest, or Hydrothorax.

The cause of this affection is inflammation of the pleura, causing an accumulation of serum in the pleural cavity. *Apis melifica* in the usual doses, repeated at intervals of three or four hours, will often effect a radical cure, and so will *Apocynum.* If these fail, use *Sulphur.*

Dropsy of the Heart.

This is an accumulation of water around the heart, in the cavity of the pericardium. *Spigelia* or *Apis mellifica* will generally cure. *Sulphur* is efficient in many cases. *Bryonia*, if from pericarditis or rheumatism.

Dropsy of the Brain. — *Hydrocephalus.*

Inflammation of the brain may terminate in an effusion of serum in the arachnoid cavity, and is often fatal. *Hyoscyamus* in the usual dose, repeated four or five times a day, may prove beneficial. *Apis melifica* has been employed in the same way, also *Helleborus.*

Dropsy of the Womb. — *Hydro metra.*

Inflammation of the womb often terminates in this affection. *Bella donna*, *Apis melifica*, *Arsenicum*, and *Helleborus nig.* have been employed against it.

Dropsy of the Scrotum. — *Hydrocele.*

This consists in the scrotum becoming filled with serum or water, after inflammation and swelling of the testes. It may be caused by Gonorrhœa, or it may be the sequel of Scarlet Fever. The same remedies employed in other local dropsies may be employed; or, these failing, the water may be drawn off, and a weak solution of iodine may be injected into the sack by a surgeon.

Ovarian Dropsy.

Inflammation of the ovaries is the cause of this difficulty. *Arsenicum* will generally have a good effect, and so will *Conium*, and also *Apis melifica* and *Pulsatilla*; either remedy in the usual dose may be administered every three hours, with the prospect of relief.

SURGICAL DISEASES.

Concussion of the Brain.

This is the result of a fall or blow, and may be relieved by *Arnica*, usual dose, and repeated if necessary. Should stupor and inability to retain food persist, try *Glonoine*.

Concussion of the Chest.

This may be produced by some sudden mechanical injury. If there is fever, give *Aconite* every three hours. If from having been compressed mechanically, *Arsenicum* may prove serviceable; and so may *Arnica*, *Pulsatilla*, and *Nux vomica*, *Bryonia*, and *China*. Any of the remedies selected may be given in the usual dose every three hours. In all cases let the diet be simple, and use friction externally; and when there has been a blow upon the head, causing the concussion, pour a stream of cold water from a small pitcher or coffee-pot for thirty or forty seconds.

Sprains.

A sprain may be more or less severe. Sometimes it may implicate only the muscles, and at others the ligaments, involving the apparatus of the joints. A sprain of the wrist requires *Arnica*, internally and externally at first, and then a compress of tepid water, covered with a dry bandage. A sprain of the hip-joint or shoulder-joint requires *Ledum*, with a lotion of the same of twenty drops to half a tumbler of water, applied by means of wetting with it a compress, covered with a dry bandage. A sprain of the knee-joint should be treated with *Arnica*, externally and internally, as above, and also with *Pulsatilla* after. Sprains of the ankles are soonest cured by applying compresses of cold water, and dry bandages over them, and by the administration of *Ledum* internally. Should this fail, use *Bryonia*.

Injury of a Nerve.

The place which *Arnica* has in surgery in the treatment of ordinary bruises and sprains is of no greater importance than that of *Hypericum*

perforatum applied directly to injuries involving the nerves. Shocks upon the nervous system, injuries to the spine, or from extracting teeth, all require *Hypericum* internally and externally, in the usual dose, and lotion.

Wounds.

Wounds are of various kinds; such as incised, lacerated, punctured, gun-shot wounds, &c. A simple incised wound needs only the sides pressed together, and compressed with a strip of adhesive plaster. The application of *Calendula* externally will facilitate the healing. Lacerated wounds require careful adjustment and dressing, and then let the dressing be wet frequently with a dilute tincture of *Calendula;* and where it is supposed the trunks of nerves are implicated, use *Hypericum*. Any of these remedies may be used internally, in the usual dose, three times a day. Contused wounds require compresses of cold water and *Arnica;* while *Arnica*, *Ruta*, and *Hypericum* may be administered in the usual form internally.

Hemorrhage from Wounds.

To remedy protracted hemorrhage from wounds, give *Arnica* or *Calendula* internally, and, with a lotion of forty drops of either in half a tumbler of water, wet compresses, and apply externally.

Hernia, or Rupture.

There are two kinds of rupture met with among persons. One is termed the femoral, and is near the groin; and another is termed umbilical, and is near the navel. There is a third kind, where the sack descends into the scrotum; and it is termed scrotal or inguinal hernia. When either has been of long standing, well-adjusted trusses must be worn, or else, for scrotal hernia, a suspensory bandage. For recent inclination to rupture, *Aconite* will subdue any inflammatory symptoms. *Arnica*, if caused by a strain; *Nux vomica*, in case of constipation of the bowels. The remedies as indicated may be given in the usual dose, three or four times a day. For strangulated hernia, *Nux vom.* every half-hour; and if this affords no relief, *Opium* the same. *Lycopodium* and *Sulphur* follow these well, given three times daily. The patient should be in a recumbent posture upon the back.

Luxations, or Dislocations.

These consist in the removal of the head of the bone from its corresponding cavity, where it forms the joint. After dislocation is reduced, the joint may be bathed with a lotion of forty drops of the tincture of *Aconite* in half a tumbler of water, while four globules may be used internally to allay any febrile excitement. *Arnica* lotion prepared and used in the same way will relieve the soreness. The usual dose of this remedy may be administered internally, and repeated two or three times

a day. To remove the pain and suffering of luxations in general, *Arnica*, *Aconite*, and *Rhux tox.* may be given as required.

Fractures.

When there is a separation of bony fibres, either simple or complicated, and the fracture has been properly reduced and bandaged, and splints have been called into requisition to aid the system in recovery from the shock, give two or three doses a day of *Arnica* internally, and wet the bandages with a lotion of the same. If there is fever, give *Aconite* or *Bryonia.*

Burns and Scalds.

By a burn is understood a sore or blister caused by dry heat. By scald is understood that produced by some heated fluid, as water, spirits, or oil. The former is soonest relieved by the application of cotton, provided the skin is not broken. The latter by cotton dipped in lime-water. If the skin is broken, it will be necessary to use, in each instance, a salve made of lard and finely prepared carbonate of lime. In all cases of burns or scalds, internal remedies are required; *Aconite*, in case of much fever; *Arsenicum*, or *Cantharis*, if there is much burning, smarting, and thirst; *Apis mel.*, if there is swelling, and inflammation following as a sequel.

Snake Bites.

These are to be treated somewhat after the manner of the bites of rabid animals: that is, by dry or radiating heat at first, and then by cauterization; internally, *Lachesis*, *Apis melifica*, and *Hyoscyamus.* Either may be given every two hours; at the same time, there is good authority for drinking copiously of whiskey or other alcoholic spirits. Several drops of tincture of *Iodine*, repeated every fifteen minutes, have saved some cases.

Stings of Insects.

Aconite, *Belladonna*, *Merc. viv.*, are remedies for internal administration, either of which may be given three times a day; *Arnica* lotion, weak solution of *Nitric acid*, or *Lemon juice*, may be applied externally. Dilute *Aqua ammonia* is a good antidote as a lotion.

The Removal of Tumors.

Nearly all tumors require removal with the knife. It is not our purpose to specify the nature of the operation, but rather to point out a treatment to be pursued after their removal. When cancerous tumors are removed, *Arsenicum* should be persistently given, every three or four hours, with the view of preventing the cancerous diathesis, or condition from reproducing the same. Where fibrous tumors are cut out, give *Calendula* three or four times a day, and apply it to the wound. Adipose tumors require, after their removal, *Pulsatilla*, three or four times a day. Fungous tumors require, after removal, *Calcarea.* The fungoid or

medullary tumors are mainly subject to medical treatment, and various remedies may aid in curing them. *Conium*, *Arsenicum*, *Sulphur*, *Cuprum met.*, and *Calcarea* may be consulted. Encysted tumors are embedded in the skin, and require dermic treatment. *Nitrum*, *Natrum muriaticum*, and *Natrum carb.* may be employed, internally and externally. Scrofulous tumors require *Arsenicum*, *Graphites*, *Juglans regia*, and *Calendula*. The two last named may be used internally and externally. Scrofulous tumors require *Arsenicum*, *Graphites*, and *Calendula*. The two last named may be used internally and externally, several times a day.

Lumbar Abscess.

A very malignant sore, that discharges a cheesy matter, and from which very few recover. *Calendula*, *Hepar sulphur*, and *Mercurius* may be given internally, and *Calendula*, *Baptisia*, and *Arnica* may be used in the form of lotions, to apply externally.

Ulceration of the Bone.

For bone ulcers, *Aurum met.*, *Silicea*, and *Calcarea* may be given in daily doses, — one remedy only at a time: *Aurum met.*, for bone ulcers caused by syphilis; *Silicea*, if from injury; *Calcarea*, if from scrofula. For ulceration of the hip-joint, *Arsenicum*, three times a day; of the knee-joint, *Sulphur*, or perhaps *Pulsatilla*, twice a day.

Rickets. — *Rachitis.*

Disorder of the nutritive functions may end in distortion of various parts of the system, and give rise to various deformities of the head, trunk, and extremities. Remedies directed to the digestive system must first be employed, in order that a healthy nutrition may be established. *Nux vomica*, *Pulsatilla*, *Ferrum*, and *China*, either of which may be given in the usual dose three times a day; after which, *Calcarea carb.* may be given in daily doses persistently, followed by *Silicea*. Good animal food may be allowed as a diet. Frequent bathing with salt water, and friction, are also to be commended.

White Swelling.

This is a form of scrofula, and requires the same remedies used in other scrofulous complaints. *Arsenicum*, *Jodium*, *Calcarea*, and *Sulphur* may be employed; and whichever remedy is selected may be given twice in twenty-four hours. *Pulsatilla*, *Bryonia*, and *Nux vom.*, in like manner, may be given, one at a time, and repeated every four hours, when there is any pain in the affected joints.

Dropsy of the Joints.

Friction externally, and some kind of soap liniment, and then the application of compresses. *Apis melifica* may be given internally, every four hours, or else *Pulsatilla*, *Arsenicum*, *Bryonia*, or *Conium*.

Stiff Joints. — *Anchylosis.*

This difficulty involves the tendons, ligaments, and bones, which in some instances become united at their extremities. These joints may be showered with cold water, rubbed with a stiff brush, bathed with soap liniment; while *Sulphur*, in daily doses, may be given internally, or else *Aurum mur.*, *Nitric acid*, or *Jodium.*

Aneurism.

Aneurisms are pulsating tumors formed of arterial blood. *Aconite* is a good remedy to administer, three or four times a day; *Digitalis*, also, in the same way; *Valerian*, in the usual dose, when the tumor appears to be in the abdomen. For Varicose Aneurism, bandaging is required, while *Hamamelis Virg.* may be administered internally.

Varicose Veins.

When the entire lower extremities are involved, bandaging with a roller, or lace stocking, must be employed, while *Hamamelis Virg.* is administered several times a day, internally. *Pulsatilla*, for pregnant women thus affected, and follow with *Lycopodium*, after three weeks.

Goitre. — *Bronchocele.*

This is an enlargement of the thyroid gland, and causes a swelling of the neck. *Jodium*, externally and internally, is said to be a sure remedy. *Kali hydriodicum*, the usual dose three or four times a day, may also be used. *Spongia* is also a valuable remedy, and so also are *Merc. iod.*, *Merc. biniod.* The remedies must be used persistently until the goitre disappears.

Wry Neck. — *Torticollis.*

This is owing to the contraction of some of the cervical muscles. Stimulating liniments may be employed externally, while *Nux vom.*, *Rhus*, *Sulphur*, *Bryonia*, or *Pulsatilla* may be administered internally.

Fistula in Ano.

This difficulty requires *Silicea*, *Calcarea*, or *Sulphur*, in daily doses. If an operation has been performed, and the *Sphincter ani* has been divided, *Arnica* may be given three or four times a day, or perhaps *Calendula;* after which, consult *Pulsatilla* and *Nux vom.*

DISEASES OF WOMEN.

Derangement of the Function of Menstruation.

From the age of puberty until the change of life, the health of the female system depends upon regular menstruation, varying in intervals from twenty-six to twenty-nine days. With this standard in view, the irregularities as to time are easily noted. By the period of puberty is understood the age capable of bearing children, which is denoted by menstruation taking place.

Ailments at the Age of Puberty.

Immediately preceding the first menstrual period, the breasts increase in size, the voice is changed, the system becomes rapidly developed, and the mind matured. There may be headache, dulness of the eyes, pains in the lower abdomen, lassitude, capricious appetite, and, not unfrequently, a premonitory leucorrhœa. To relieve these ailments, *Aconite;* four globules may be given first; *Pulsatilla* may be given after *Aconite*, to remove the pains in the abdomen, and to promote menstruation. If there is much pain, and the function is tardy in making its appearance, give *Calcarea* or *Sulphur*, and then follow with *Pulsatilla* every four or six hours until the period commences. In case of considerable leucorrhœa, give *Sepia*, or perhaps *Graphites*. When the periods become established, they should last from three to five days. If scanty at first, give *Ferrum*, and follow with *Pulsatilla;* if there is intense headache, give *Belladonna*; if there is hysteria, and much agitation and suffering, give *Hyoscyamus;* and, during the interim, let the young lady take strengthening food until signs of the recurrence of another period. If it comes on normally, it is well; but if tardy or painful, resort again to *Pulsatilla*, *Hyoscyamus*, *Belladonna*, and *Graphites*, as they may be indicated; and continue this treatment from time to time until regularity is established. If tardy, with pains in the back, *Kali carb.*

Interrupted Menstruation.

This may be caused by cold, fright, fevers, diarrhœa, and dysentery, and by pregnancy. When by cold, or getting the feet wet, *Aconite*, at first, to remove any febrile excitement or headache, and then *Pulsatilla.*

If this fail to remove the obstruction, give *Calcarea*, and follow with *Nux moschata;* should this fail, try *Sulphur*. When menstruation is interrupted by fright, and there is intense headache, give *Aconite*, and follow with *Belladonna* or *Ignatia*, and finally with *Pulsatilla*. When fevers weaken and depress the system, so as to interrupt the function, first reduce the fever, and then, by properly nourishing the patient, the period may return. The same rule may be observed in treating the interruption caused by Diarrhœa or Dysentery. These diseases should be treated and cured by appropriate remedies, and the period will be likely to return spontaneously. If otherwise, resort may be had to *Pulsatilla*, *Belladonna*, *Sepia*, *Calcarea*, and other remedies, according to indications.

Excessive Menstruation.

When the flow is excessive or weakening, *Ipecac.* and *China* may be employed, — the first to regulate, the last to strengthen the system; and this treatment will be found necessary at each period, until duly regulated. *Calcarea* should be given once daily between the periods.

Menorrhagia, or Profuse Bleeding from the Womb.

This indicates a want of tone in the uterus, if not a state of disease, and is usually attended with fainting, pain in the back, nausea, and hysteria. When from a want of tone, or debility, *China* or *Ferrum* may arrest the difficulty; if from disease or inflammation, *Belladonna* or *Arsenicum;* when there is fainting and nausea, *Ipecac.;* pain in the back, *Nux vomica*, *Nux moschata*, or *Ignatia*, especially if the flow is dark or almost black, with fainting and drowsiness; for hysteria, give *Hyoscyamus*. The patient should lie in bed until relieved, and should begin sitting up with great caution. A generous diet, easy of digestion, should be supplied patients of this description. When the strength will permit, this class of patients should seek fresh air, and should avoid warm baths. Bathing with tepid water is far better.

Painful Menstruation. — *Dysmenorrhœa.*

Some ladies suffer intensely at every menstrual period. They have chills, headache, fever, colic, and most excruciating pains in the womb. *Aconite* must be given for the fever, *Belladonna* for the chills and headache, *Colocynth* for the colic, and, for the pains in the uterus, *Hyoscyamus*, *Pulsatilla*, *Cimicifuga*, or *Rhus*.

Ailments attending Change of Life.

This occurs about the forty-fifth year of life, and is denoted by irregularities, — profuse menstrual periods, great irregularities, pain in the head, melancholy, mania, loss of memory, and great nervous depression. For profuse menstruation at this period, give *Arnica* or *Lachesis;* for headache, *Belladonna* or *Sepia;* for intense pains in the womb, *Arsenicum* and *Conium;* for Melancholy, *Lachesis*, or perhaps *Petroleum;* for mania *Stramonium:* for loss of memory, *Sulphur*, *China*, or *Calcarea*.

Ailments during Pregnancy.

Some ladies are troubled much with morning sickness in the early stage of pregnancy, and this is often cured with *Cocculus* or *Nux vomica;* if with heartburn, *Cimicifuga* or *Mercurius viv.;* if with water-brash of a hot or acrid nature, *Arsenicum.* Sometimes these derangements are so stubborn that no remedies seem to relieve. *Simple sirup*, by the wineglassful, has been taken by some, *Champagne wine* by others, *hard Cider* by others. The simple resort will sometimes relieve; and, at others, nothing seems to afford relief. Discharge of blood from the uterus may be cured with *China.* LEUCORRHŒA, very profuse and debilitating, requires *Sepia* twice a day; corroding discharges, *Calcarea* twice a day; for rheumatic pains, *Caulophyllum;* for painful breasts, bathe with *Phytolacca;* for threatened miscarriage, *Ipecac*, *Sabina*, *China*, *Arsenicum*, and *Belladonna;* for sleeplessness, *Nux vomica* or *Ars.*, and a light diet at night; for nose-bleed, *Carbo veg.*, *Aconite*, *Belladonna*, *Lachesis*, and *Mercurius*, a dose of any one of them twice a day.

LABOR, PARTURITION.

False Pains.

THERE is a kind of pain that afflicts parturient women, that simply aggravates and unsettles the nerves. *Cimicifuga* or *Caulophyllum* will usually control this. When true labor pains commence, they may be regarded as normal if they come at regular intervals, and increase in force and frequency as the labor progresses. No medicine is needed; and waiting, with patient labor, will accomplish the object. After the child is born, a dose of *Pulsatilla* will aid in expelling the placenta. If there is hemorrhage, elevate the hips and depress the head, and give a dose of *Secale cornutum;* if anything more complicated occurs, call on an experienced midwife.

Milk Fever.

About the third day after labor, there is a struggle in the system to fill the breasts with milk, attended with fever. Give *Bryonia* or *Pulsatilla;* if the milk is tardy in coming, give *Calcarea.*

Difficult Urination.

After labor, there may be difficulty in passing urine, which *Arsenicum* or *Hyoscyamus* will usually relieve, if aided with cloths wrung out of warm water applied to the region of the bladder; or else *Aconite* may be used instead of *Hyoscyamus*, and sometimes *Pulsatilla*, or *Cantharis.*

Soreness after Delivery.

A painful soreness of the muscles after delivery may be relieved by the internal administration of drop doses of *Arnica* in a spoonful of water, while at the same time a towel wet with *Arnica tincture* may be applied to the abdomen. If there is soreness of the vagina, forty drops of the tincture of *Calendula*, in half a pint of tepid water, may be used as an injection.

Constipation of the Bowels.

This condition after labor may be removed by one or two doses of *Nux vomica*, or perhaps by the same of *Lycopodium;* if they fail, the bowels should be moved by an enema of warm salt water.

Excoriated Nipples.

Soon after the breasts fill with milk, and the child begins to nurse, the nipples are apt to become sensitive, and sometimes exceedingly sore. For a little sensitiveness, or slight irritation, bathing the breasts with a solution of *Arnica* will help them; or perhaps a solution of powdered *Borax* will do as well. If the soreness amounts to a decided inflammation, and the exterior of the nipples crack and bleed, a more careful and efficient treatment is needed. When putting the child to the breast excites great pain in the gland, and severe after-pains at the same time, the internal administration of *Belladonna* is necessary, — two or three doses during twenty-four hours; and, at the same time, wet a compress with *Arnica tincture*, and apply to the nipple. *Arnica* also may be given internally. When *Belladonna* fails, *Bryonia*, when the pains are worse in damp, cold weather. As an external application, a decoction of *Oak bark* has been found useful, and also the same of the *Apple-tree root.* A solution of *Alum*, *Tannin*, or *Sulphate of zinc*, has been employed; but if the skin is cracked, and blood oozes out every time the child nurses, it is of little service. A weak solution of *Nitric acid* is better, two drops to an ounce of water. The best external application for healing the cracks is the *Glycerole of aloes*, which is made by dissolving one ounce *Aloes* in four ounces of *Glycerine.* This is the best preparation known to heal an inflamed and cracked surface on any part of the body. At the same time, *Sulphur*, *Hepar sulphur*, *Calcarea*, and *Nitric acid* may be administered internally. It is hardly necessary to add, that whatever lotion is used externally must be carefully washed off with warm milk and water before the child is allowed to nurse.

Suppression of the Milk.

After the breasts have once filled with milk, and it disappears, a return may be promoted by the internal use of *Calcarea carbonica*, followed with *Pulsatilla*, or *Phytolacca*, while the patient is required to drink chocolate, or table beers.

Induration of the Breasts.

When the breasts cake, or portions of them seem hard, like a potato, rub them well with lard, and give internally *Carbo animalis.* In a majority of instances, these hard cakes will disappear if carefully attended to. When lard fails to soften, try dry rubbing with the hand. If the breasts ache, give *Belladonna;* if there is fever, *Aconite*, or *Phytolacca.* If inflammation sets in, and cannot be scattered, give *Hepar sulphur* to hasten it to a crisis. Poultices of flaxseed meal may also be applied to hasten suppu

ration. If it is found necessary to lance the abscess, let it be done with an opening in the direction of the milk-ducts, and not across them; for, when once severed, the parts never unite perfectly again. After the matter has discharged, some emollient salve spread on chamois skin may be applied, for the double purpose of protecting the breasts and healing the sore.

Suppression of the Lochia.

The flowing after delivery is termed "Lochia," and should continue for ten days or two weeks. If, through any unfavorable influences, the flow is suppressed, the whole system will be more or less disturbed. If simply arrested, *Pulsatilla* may be given every two hours, for at least a day; and, if there is no return, give *Secale cornutum*. If still the suppression seems stubborn, and the head begins to feel light, and the nerves become unstrung, give *Hyoscyamus*, and repeat every three hours until better, or there is indication for a change. *Sulphur* will sometimes remove the difficulty. If the light-headedness be very marked and maniacal, and there is no inclination to sleep, a decided advantage may be found in the use of *Belladonna*. If the lochia should finally return, and be of offensive odor, give *Rhus tox.;* if much thirst and dryness of the throat, *Arsenicum;* in case of diarrhœa, *Arsenicum* and *Mercurius viv.*, repeated every two hours. The application of tepid cloths to the abdomen is recommended, until the lochia returns. Should the lochia continue too long, — that is, beyond the seventeenth day, — *Rhus*.

Child-bed Fever.

A low form of fever frequently sets in about the fourth or fifth day after confinement, sometimes severe enough to prostrate the patient for weeks. Every day, she will suffer from pain in the head and copious perspiration; the hair falls out. This fever sometimes continues until a diarrhœa sets in, and the patient sinks into a typhus and expires. Therefore, at the first manifestation of this fever, *Bryonia* should be given every three hours; and this may be followed with *Rhus tox.*, in the same manner. In case of diarrhœa and prostration, give *Arsenicum* or *Veratrum album*. If there is sallowness of the complexion, give *Mercurius viv.* A very light mutton-broth may be given for nourishment. Should there be a general pain, and aching of the whole body, give *Phosphorus* two or three times, and especially if the diarrhœa should be dark and watery. If the fever should be subdued, and convalescence established, allow the patient a little wine and water, beef-tea, and a gradual approach to more substantial aliments. Should the above remedies fail, any typhoid symptoms present themselves, *Baptisia*, hourly.

Leucorrhœa after Confinement.

A flux of this kind may result from general debility, and requires for its removal a good nourishing diet. *China* may be given three or four times a day at first, and afterwards *Sepia* or *Calcarea*.

Falling of the Womb.

In some cases, after child-birth, there will be falling of the womb. This may be the result of a weakened condition of the muscles that retain the womb in its place. When this trouble is of an aggravated form, and is attended with copious Leucorrhœa, *Nux vomica* may be given every evening. The patient should allow herself to be as little upon the feet as possible, — rest being one of the essential conditions for gaining strength and for obviating the difficulty.

Hemorrhoids, or Piles.

For the piles consequent upon a tedious labor, *Arnica* may be given every morning and evening, or perhaps *Hamamelis*, if they are inclined to bleed; also *Nux vomica* and *Sulphur*, when there is severe constipation and hemorrhage at every stool. *Sulphur* in the morning, and *Nux vomica* in the evening. Stewed prunes, Graham toast, and chicken soup, may enter into the diet.

DISEASES OF INFANTS.

Crying.

When a young infant is inclined to cry continually, and sleeps but little, give it one or two globules of *Coffea*, and repeat every four hours.

Colic.

For infantile colic, which may be caused by flatulence, give *Chamomilla;* put one or two globules upon its tongue. If this does not relieve, give a globule of *Nux;* if restless, and throws up its food, after the *Nux*, give a globule of *Coffea*. *Verat. album* is an excellent remedy for infantile colic, and *Dioscorea* has a great reputation.

Infantile Diarrhœa.

There will generally be a diarrhœa after an infant has nursed the first-fruits of the breast. If excessive, give one or two globules of *Pulsatilla;* if attended with colic, give the same of *Chamomilla;* if the diarrhœa is acrid or scalding, give *Arsenicum*, one or two globules; if with excessive vomiting, give *Ipecac*.

Infantile Dysentery.

When young infants are observed to strain, and have frequent stools and sometimes pass mucus and blood, give *Ipecac.*, one globule, or else *Mercurius*. If they cry out after each stool, and the intestine protrudes, give one or two globules of *Ignatia*. If they refuse the breast, give *Aconite*. In case of heat in the head, give *Belladonna*.

Inability to take the Breast.

Some infants are congenitally opposed to nursing the breast; and all the coaxing and trying which a patient perseverance can supply avails but little. Such infants require to be fed; and to devise for them a good and wholesome nourishment is sometimes difficult. The nursing-bottle must take the place of the breast, and the child must be nourished by it. One of the best preparations of food for young infants is a thin gruel

made of a table-spoonful of unbolted flour to a quart of water, to be boiled half an hour, and then strained through a fine strainer, sweetened, and put into a nursing-bottle sufficiently thin to flow through the tube. This food may be enriched with a little good milk, as the child requires it. Nothing has so uniformly answered as a substitute for the breast.

Infantile Jaundice.

Young infants sometimes become yellow, and their skin affords evident signs of jaundice. One or two globules of *Mercurius viv.*, followed by one or two of *Pulsatilla*, will change this condition. If frequent discharges from the bowels occur after these remedies, give one or two globules of *Arsenicum*.

Snuffles.

In cold weather, young infants are prone to take cold easily, from the slightest change; and they will show it by sneezing and snuffling: occasionally there will be indications of fever, and heat in the head. One or two globules of *Aconite* may be given first and then one or two of *Nux vomica*. If there is thin discharge from the nose, give a globule or two of *Arsenicum*. *Sambucus*, twice daily, is a good remedy.

Sore Mouth, Aphthæ.

Considerable uneasiness is manifest in young children from a perceptible inflammation of the mucous membrane of the mouth. It will look red and inflamed, and there will be perceptible some little points or pimples of a whitish character. Give one or two globules of *Mercurius* or *Bryonia*, and wash the mouth with warm tea, or milk and water. Some have introduced into their mouths a little powdered *Borax*. This difficulty is generally of brief duration, and is but a trifling malady.

Thrush.

This is also a sore mouth to which infants are subject, and a little more serious in its character. The child first has fever, and then refuses to take its food. On examining the mouth, it is found to contain a number of white blisters that have a sore and inflamed appearance. One or two globules of *Phosphorus* will often cure the trouble. *Bryonia* has also been used. *Mercurius viv.* may also be used. A decoction of black tea may constitute a wash; also a weak solution of *Borax*. Good nursing, and care to prevent taking cold, are essential. If with this kind of sore mouth there is diarrhœa, give one or two globules of *Arsenicum*. If the child cries much from colic, one or two globules of *Colocynth* may afford relief.

Red Gum.

When an infant is one or two days, or a week old, there occurs an eruption all over the body, of a bright red appearance, that probably itches, and causes the child some suffering. A globule of *Pulsatilla* night and morning will suffice to cure the difficulty.

Retention of Urine in Young Infants.

This difficulty occasionally is observed, and is attended with much restlessness and inquietude. An infant should urinate eight or ten times in twenty-four hours; and, when there is a failure in this respect, give one or two globules of *Hyoscyamus*, and repeat every three or four hours until the derangement is obviated. When *Hyoscyamus* fails, give a globule or two of *Pulsatilla* or *Aconite*.

Teething, Dentition.

When an infant has attained the age of four or six months, the period of teething commences. The child begins to drool, and is restless and uneasy, and frequently cries out with pain. At times the cheeks will be red, and the head will be hot; or else there will be diarrhœa, and the food will pass the bowels undigested. The child is generally fretful and uneasy. The most effectual remedy for the restlessness and irritative fever is *Chamomilla*. Two or three globules may be given three times a day. When the head is hot, and the child thrusts its fingers into its mouth, give two globules of *Belladonna;* when the food passes undigested, give two globules of *Pulsatilla*. When there is a general heat of the body, and deranged condition of the stomach, give two globules of *Aconite;* if this fails to relieve in twenty-four hours, give *Cimicifuga* every hour.

Summer Complaint, Cholera Infantum.

During the heat of summer, teething children are prone to be affected with a prostrating diarrhœa, sometimes watery, at others dysenteric, when the stools are tinged with blood. In the first stage, when there is considerable fever and watery discharges from the bowels, two or three globules of *Aconite* may arrest the difficulty, followed by *Tartar emetic;* if the discharges are profuse and frequent, *Veratrum album;* if there is much thirst, *Arsenicum*. For discharge of mucus, give *Mercurius;* when tinged with blood, give *Ipecac*. The dose of either is two globules. When there is coldness of the face and extremities, give *Carbo veg*. If, in spite of these remedial measures, the disease continues, let the child be taken into the open air, or into the country. A trip upon the water in a steamboat has frequently resulted in a favorable change in the condition of the child. The diet, aside from nursing, should be mutton-broth and beef-tea, or perhaps arrowroot or farina gruel.

Marasmus, Extreme Emaciation.

From the combined effects of teething and interrupted nutrition and also from diarrhœa, the child will lose its flesh in a remarkable degree, and nearly all the adipose or fatty tissues will seem to disappear. The bones of the face will become prominent; the eyes will sink back into their sockets; the skin will be shrivelled and loose over the entire body, and very marked upon the upper and lower extremities. The most prominent feature of the disease is interrupted nutrition; and often the child's stomach rejects the simplest kind of food. When there is continual retching,

give *Ipecac.*, to allay the irritable condition of the stomach; and then give *Calcarea;* or if, at first, there is no nausea, but thirst, give *Arsenicum*. *Sulphur* is a valuable remedy, and also *Ferrum*. When either beef-tea, or barley-gruel, or any other kind of light soup or gruel, fails of being retained upon the stomach, a gruel made of the flour of the yelk of a hard-boiled egg has supplied the want of nourishment, and promoted the recovery of marasmus patients. When the child is old enough to feed himself, the yelk, boiled hard, may be broken in a saucer, and seasoned with a little salt; and the child will pick it up a little at a time and eat it. But if otherwise, to a pint of boiling water add a half-pint of fresh milk and the flour of one yelk, seasoned with salt, and sweetened. This makes a gruel that will flow through a nursing-tube. This food contains the best preparation of iron for the infantile system, and in many instances has been effectual in curing marasmus.

Hiccough. — *Singultus.*

This annoying difficulty results from the irritation of the diaphragm and the œsophagus, or passage from the mouth to the stomach. *Nux vomica*, *Ipecac.*, *Pulsatilla*, and *Sambucus*, have been employed as remedies. A single dose of two globules of either may be administered when infants are so affected.

Convulsions, Fits.

There may be various causes of these convulsions in infants. A fever, an irritable stomach, teething, or cold, may produce them; when from fever, give two globules of *Aconite*, and in two hours follow with a dose of two globules of *Belladonna*. When from an ill-conditioned stomach, give *Chamomilla*, *Ipecac.*, or *Ignatia;* when from cold, *Nux vomica* or *Sulphur*. When the convulsion comes on with vomiting, *Ipecac.;* when from colic, *Pulsatilla* or *Colocynth;* when with inclination to sleep, *Opium*, or perhaps *Stramonium;* when from the sudden disappearance of any rash or eruption, *Cuprum*.

Excoriations.

The tender and delicate skin of infants is liable to become excoriated from the slightest causes. To relieve the pain and suffering attendant upon it, give two globules of *Chamomilla*, *Mercurius viv.*, or *Pulsatilla* internally, and wash them with a weak solution of *Arnica* or *Hamamelis* externally. Should this condition persist, give *Sulph.* daily.

Soreness behind the Ears.

When a child is teething, and there is considerable of the fever of dentition, an eruption is liable to show itself behind the ears; and, although this eruption is believed to be effectual in preventing more serious disease of the head, it is, nevertheless, an unnecessary disease. *Graphites* may be given to remedy the difficulty, a single dose in twenty-four hours; and, in like manner, *Arsenicum*, *Calcarea*, and *Baryta Carb.*, may be employed.

Prickly Heat.

During intensely hot weather, children are liable to break out with prickly heat. The stomach at first seems slightly deranged, and the eruption upon the surface appears to be an elimination of some internal disorder. There is sometimes much fever and headache: for this, give two globules of *Aconite*. If the child is teething, give *Chamomilla*. If the surface becomes red and inflamed, give *Rhus tox.* If burning and smarting, give *Arsenicum*. In case of severe itching, give *Sulphur*. When children are taken out by their nurses on a hot day, they must not be exposed to the heat of the sun: shade should be sought for them, where, if any air is stirring, they can get the benefit of it.

Milk-Crust.—*Porrigo.*

This is a scabious eruption upon the scalp of nursing infants, which at first appears to be a humid scurf. It collects as a slight humor, and begins to enlarge, involving more and more of the surface, until that of the scalp is entirely covered. It is a source of annoyance to mothers and nurses. There appears to be great difficulty in keeping the affected surface clean, and consequently a hasty resort to some drying wash has wrought disastrous effects. When Milk-Crust is suppressed, the irritation is apt to fall upon internal organs, and produce worse affections. The tar and sulphur ointments, which have been too frequent a resort, have had the effect, in some measure, to dissipate the eruption; but the usual sequel to this are convulsions, or fatal brain diseases. It is, therefore, recommended as the most prudent course, to depend upon the internal administration of remedies such as eliminate the humor, and keep it upon the surface. The purer the blood can be kept, the sooner will the disease disappear. If no attention is paid to the use of external agents, the entire difficulty will be eliminated and dissipated in the course of a few months. Two globules of *Aconite* may be given when there is fever, and this may be followed for a while with daily doses of *Rhus tox.* and *Bryonia*. In scrofulous children, give *Calcarea*, *Arsenicum*, or *Sulphur*. In debilitated constitutions, give *Graphites*, *Ferrum*, *Hepar sulphur*, and *China*. *Lycopodium*, three times daily, has cured most obstinate cases. All oily food should be withheld. Butter is not allowable. After children have been weaned, and still the Milk-Crust remains, a farinaceous food is best.

Scurf of the Head.

This is an accumulation upon the scalp, of an oily and dirty appearance, which, in many cases, is the result of not being particular in washing and wiping the head dry. Soap should never be used upon the scalp, and strong alkaline solutions are injurious. Water softened with corn or rye meal will answer all the purposes for cleanliness. As the difficulty does not penetrate below the external skin, *Rhus tox.*, *Pulsatilla*, *Calcarea*, and *Silicea* are remedies, either of which, in daily doses, will be all that is required.

Scrofulous Swelling of the Salivary Glands.

This is a disease somewhat common to children of scrofulous parents; and it is of the utmost importance to understand well its character and treatment. When these children take cold, the glands are apt to become excited, and there is a perpetual flow of saliva from the mouth; at the same time there will be soreness of the throat, stiffness of the neck, and swelling of the glands externally. Sometimes children will carry their heads to the right or left shoulder, when laboring under the difficulty; and, in spite of the best efforts to relieve them of suffering, they will continue indisposed a long time. Two or three globules of *Aconite* will subdue the initial fever. *Mercurius viv.* may then be given two or three times a day. If this fail to arrest the salivation, give *Nitric acid* for a day, at intervals of six hours. *Belladonna* also may be given to remove any congestion of the throat. *Silicea* may be given afterwards to aid in softening the glands. Also, *Nux vomica* and *Sulphur* may prove to be useful remedies. The children should be kept in a room of moderate temperature, and not be allowed at any time to be exposed to extremes of heat and cold until they have fully recovered.

Sleeplessness of Infants.

Infants are sometimes smitten with inability to sleep, as well as adults. The cause is not always known. It is believed, however, to be the result of some disorder acting upon their delicate nerves; such as indigestion, excoriation, or overloading their stomachs. If from an irritable stomach, give them *Chamomilla* or *Coffea* every night. If from any excoriated surface, that burns and smarts, give two globules of *Arsenicum*, and then apply to the excoriated surface a little rye flour, or *Lycopodium* powder, and soothe them to sleep in a quiet and noiseless room. If the sleeplessness is produced by retention of urine, give *Hyoscyamus;* if by worms, *Cina.* If the head is hot, give *Belladonna.* If the sleeplessness is from feeding the child too much, give two globules of *Pulsatilla.* If from constipation of the bowels, give *Nux vomica* or *Lycopodium* at night. If these remedies fail, a tepid bath will often consummate the desired result.

DISEASES OF VARIOUS ORGANS AND REGIONS.

Passage of Gall-Stones.

THE passage of gall-stones is attended by severe pain in the region of the stomach, obliging one to writhe in agony, and roll from side to side. The strongest men become subdued when suffering from the passage of these concretions. The pain resembles an intense colic; and sometimes the agony produced by biliary calculi goes under the name of Bilious Colic. In addition to the pain occasioned by the concretions, there may be vomiting, headache, cold extremities, and sallow complexion. To relieve the suffering, resort has been had to *Morphine* and *Opium;* but those sedatives only prolong the difficulty. They afford only temporary relief from pain, and the use of them must be discouraged. Cathartics, on the whole, have failed of accomplishing the purpose, and only weaken the patient. Homœopathic remedies have sometimes afforded prompt relief; but, as a general thing, the success attending the most perfect affiliations of indicated remedies has not been great. The most modern treatment for biliary calculi is to administer to the patient from two to four ounces of pure *Olive oil*, the laxative effect of which has gently moved the bowels, and brought from the gall-duct large numbers of the concretions, sometimes a dozen or more; after which, the blackness of the countenance will begin to disappear, the indurations found in the region of the liver become lessened, the appetite returns. When attacks of Bilious Colic occur, it is not always certain that the gall-duct is obstructed with stones. Therefore, *Colocynth*, in the usual dose, may afford prompt relief; even when gall-stones have been present, and the suffering and agony are indescribably great, *Pulsatilla* has cured. When there is severe pain and induration in the region of the liver, a dark, sallow countenance, and black circles around the eyes, much relief has been obtained by the use of *Arsenicum*. When there remain black spots or discolorations upon the face, *Sepia*. When there is much vomiting during an attack, *Ipecac*. External applications sometimes prove useful. Emollient poultices applied to the region of the pain have proved beneficial. The pain attending the passage of biliary concretions has sometimes been mistaken for chronic Inflammation of the Stomach; and, on this account, the remedies have failed to

control the suffering. Very many persons suffering from chronic Liver Complaint become victims to the suffering produced by gall-stones, and should restrict themselves to a simple but nutritious diet. After an attack, the olive oil should be taken for at least six months, a tablespoonful on retiring, each night.

Cancer of the Liver. — *Schirrus.*

In the event of a constant suffering in the right side, with apparent hard protuberances, while, at the same time, there are dark circles around the orbits of the eyes, and when there are shooting or lancinating pains darting from the indurated protuberances, a cancer may be suspected. If not too far advanced, it may be cured by the administration of *Arsenicum*, when there is much thirst and dryness of the mouth, a white coating upon the tongue, and considerable prostration. *Conium maculatum* may be given three times a day when there is pain in the right side, as if constricted by a band, or tearing and stretching in the region of the liver, and colicky, abdominal spasms.

Cancer of the Stomach.

This formidable disease often comes on insidiously, and the victim supposes himself to be a sufferer from an aggravated form of Dyspepsia. Severe anxiety and trouble are supposed to have a serious influence in the production of the disease. A constant irritation of the mucous lining of the stomach may terminate in the difficulty. The chief symptoms denoting the presence of Cancer in the Stomach are great depression of spirits, a downcast countenance, a pinched appearance of the nose, with the corners of the mouth drawn down, and also a constant inclination to retch and vomit dark matter, somewhat resembling coffee-grounds, and also severe cutting or shooting pains in the stomach, with intense thirst. *Nux vomica* has sometimes cured Cancer of the Stomach. The indications for its use are intensely bitter eructations, and spitting up of dark matter; and also when the eructations are followed by vomiting of sanious or bloody matter. When the patient has suffered greatly from anxiety and Dyspepsia, *Ignatia* may be given, instead of *Nux vomica*. When the tumor can be diagnosed or discovered by external manipulation, *Arsenicum*, and also *Conium*, may be given twice a day. *Cocculus* also may be given when the nausea and vomiting are similar to that produced by riding in a carriage, or sea-sickness. When one has suffered many years from Dyspepsia, and then begins to emaciate and spit up this dark matter, *Nux vomica* given persistently is most likely to be of service. The patient should subsist upon broths, beef-tea, and the most delicate farinaceous diet.

Cancer of the Intestines.

The symptoms which denote the presence of Cancer of the Intestines are constant pain in the bowels, and acrid discharges of blackish stools, a very black or dark appearance of the countenance, downcast expression, a constant inclination to relieve the pain by pressure of the hands

and arms. This affection generally terminates fatally, — the result being perforation of the bowels. When autopsy, or post-mortem examination, reveals the fact, it is then called to mind that the victim has worn the expression and complained for a long time in a way that might have excited suspicion of the trouble. To note these symptoms when they first occur may suggest a treatment that possibly might avert a fatal termination. *Arsenicum* may be given when the patient has thirst, burning pain in the bowels, and hot, acrid stools; *Conium*, when the pains appear to be of a neuralgic character, and persistent; *Belladonna*, when there is a painful distention of the abdomen. The diet should be the same as that directed for Cancer of the Stomach.

Cancer of the Skin.

When inflammation of the skin, or any persistent irritation, terminates in Cancer, there is a rough, hard tumor of a bluish appearance, at first about the size of a common wart. It sometimes grows into the shape of a tumor, and is the seat of sharp, shooting pains. The remedy that has apparently cured this affection is *Silicea*, in daily doses. It is particularly indicated when there is painful soreness or sensitiveness of the skin, and an itching of the whole body; and also when there is stinging in the sore. To prevent cutaneous ulcers of the skin from becoming cancerous, the same remedy may be used. To prevent horny excrescences from assuming a cancerous character, *Conium* or *Causticum* may be given in daily doses. Almost any persistent irritation may assume the character of a cancer. Ichorous ulcers, fetid sores, malignant boils or ulcers, should be carefully treated and cured, or otherwise they may take on a settled or constitutional schirrous character. The skin should be kept clean; a flesh-brush should be frequently used, and exercise in the open air is commended. Diet free from condiments, but nutritious.

Fig-Warts.

These are excrescences upon the skin in the shape of a fig, and hence their name. *Nitric acid* and *Thuja* are remedies for these excrescences. *Thuja* is more particularly indicated when they bleed; *Nitric acid*, when they are flat; *Nux vomica*, when they are dry. When they suppurate, or are humid, *Thuja;* when they split or crack, *Nitric acid.* Of the remedy selected, give a dose every day. For Common Warts, *Thuja* is also the chief remedy, and should be given every two or three days.

Gangrene.

When one has been so long sick as to acquire bed sores, and these become black and fetid and deathlike, they are said to be gangrenous. They indicate a low condition of the system, and generally indicate the employment of *Arsenicum* in daily doses, or else *Lachesis.* For Dry Gangrene, give *Arsenicum.* For that which is humid, give *China.*

For that which emits an offensive odor, give *Secale cornutum.* This last remedy may be given for gangrenous blisters. The patient, if he take it, should have a generous diet.

Zona, or Shingles.

In some cases, there is a zone or belt of vesicles, four or six inches in width, that extends half round the body, on the right side, over the region of the liver. These vesicles appear to be filled with lymph, and are prone to burn and itch to almost an unbearable extent. It is believed to be a concomitant of chronic Liver Complaint, and indicates an exceedingly low condition of the blood. *Rhus tox.*, in daily doses, will generally cure the disease. *Graphites* may be given after *Rhus tox.* When there is pain in the right side and a sallow complexion, give *Mercurius. Bryonia* will eliminate the eruption, and aid materially in the invigoration of the system. If there is much headache, give *Belladonna.* If the patient is scrofulous, give *Arsenicum* or *Calcarea.* The diet of the patient, if his appetite will permit, should be quite generous. A little wine every day is recommended. Beef or mutton without condiments, and the usual vegetables, are allowed.

Nasal Polypus.

This fungous growth in one or both nostrils sometimes proves a serious obstruction to respiration through the nose, and can be cured, in most instances, with well-chosen remedies. When both nostrils are affected, give a dose of *Calcarea* every twenty-four hours. When the Polypus is in the right nostril, give *Pulsatilla;* when in the left, give *Sanguinaria.* If the nostril seems plugged, give *Sepia* or *Silicea.*

Warts on the Nose.

Warts on the nose are sometimes quite annoying, as they not only are inconvenient, but often painful. It is difficult to let one of these excrescences alone; and, by constant irritation, it may become cancerous: therefore, prompt treatment when they make their appearance is requisite. *Causticum*, given at first, will soon relieve the nose of this appendage.

Warts on the Hands.

When warts on the hands are prone to grow thick and large, and appear to be seedy, *Thuja* in the form of lotion may be applied externally, while the usual dose of the same may be taken internally. *Cuprum asceticum* also may be taken internally, and a wash of *Cuprum sulph.*, one dram to half a pint of water, may be applied externally.

Inflammation of Glands under the Arms.

A sore upon the back of the thumbs, and sometimes an irritable sore upon the backs of the fingers and hands, may cause soreness and inflam-

mation of the glands in the arm-pits; that is, the inflammation may be transferred to this locality from the thumb, fingers, or hands. At first, a slight soreness is felt under the shoulder in the arm-pit, and the glands will swell and become sore to the touch; more or less fever will manifest itself at the time; and not unfrequently pain, throbbing, and suppuration supervenes upon the inflammation. *Aconite* may be given to subdue the fever and inflammation; *Hepar sulphur* may be given to promote suppuration; *Belladonna* or *Bryonia* to prevent it. *Phytolacca*, also, is a most useful specific, given every three hours until relieved.

Inflammation of the Groin, Inguinal Glands.

The inguinal glands are situated in the groin; and sometimes sores of an irritable character upon the toes may operate so as to transfer these influences to this region, causing swelling and suppuration. If taken in time, this soreness may amount to nothing more than an uncomfortable lameness, rendering it difficult to walk. If not arrested, the inflammation will pass into suppuration. Sores or chancres upon the integuments of the penis may also cause inflammation, swelling, and even suppuration, of the inguinal glands. When caused by sores on the toes, poultices of bread and milk may be applied to them, to draw the inflammation from the groin; and *Nux vomica* may be given internally, to aid in curing the difficulty. When this inflammation occurs in scrofulous persons, *Arsenicum* may be given twice a day. When the inflammation proceeds from a chancre, give *Merc. iod.* three times a day; when from suppressed Gonorrhœa, give *Sulphur*. *Mercurial ointment* may be applied to the sores, when of syphilitic origin. If they occur from Syphilis, *Merc. iod.* may be given internally three times a day.

Milk Leg. — *Phlegmasia Dolens.*

This affection frequently occurs one week after delivery. It consists in a swelled condition of the thigh and leg of either the right or left side. The skin becomes tense, sore to the touch, ademato us or dropsical, and very sensitive. It rarely affects both limbs at the same time, although in some instances such is the case. It may sometimes be arrested in the incipient stage by a single dose of *Aconite*. In a more advanced stage, *Belladonna* will have a curative action; and, where there is great sensitiveness of the skin, *Rhus tox.* When the victims of Milk Leg have been afflicted with dropsy before confinement, *Arsenicum* may be given. In cases where women are suffering from rheumatic pains in the knees, or where there is suppressed lochia, *Pulsatilla*. When the bowels are constipated, *Lycopodium* may be given, and not repeated for several days.

Stone Bruise.

By a Stone Bruise is understood an injury upon the plantar, or under surface of the foot, which becomes inflamed, painful, and suppurative. It mostly occurs with boys and girls who run barefooted through the warm

weather; and it is believed to be the result of stepping forcibly upon pebbles or other hard substances. *Arnica* given once or twice internally, and a lotion of the same applied externally, will often remove the pain speedily; but, after suppuration has taken place, the sooner the matter is let out with a lancet the better.

Bunions.

These protuberances upon the joint of the great toe, or upon the side of the foot immediately back of the little toe, frequently grow so large as to interfere with the wearing of a shoe or a boot, and so painful as to interfere with the comfort of the patient. In order to derive any benefit from treatment, all mechanical interference must be removed, the boot or shoe must be shaped to favor the tumor, and then wet the tumor a number of times during the day with *Arnica*. *Antimonium crud.* may be given internally, or else *Calcarea*, *Sepia*, or *Sulphur*. Give but a single dose of each remedy; after which, wait with patience. If the bunion is very painful, give *Calcarea*; and, after two days, give *Nitric acid*. If the pains are stinging, *Lycopodium*, *Silicea*, or *Sulphur*. Give a single dose of either remedy, and wait forty-eight hours. A weak solution of *Nitric acid* will often moderate the severe pain of a bunion in dry weather; *Bryonia* will do the same in cold, damp weather. *Silicea* or *Rhux tox.* will afford great relief when every change of weather aggravates the pain and suffering. In case of the bunions becoming the seat of neuralgic pain, *Belladonna* may be given; and when they are made sore by chilblains, as in scrofulous persons, *Arsenicum* must be given. The patient must not walk much, but keep the feet dressed and warm until the soreness disappears. A poultice of bread and milk will soften and mollify the aching during a storm.

Hectic Fever.

The importance of this fever is so great, that, instead of elaborating upon it under the head of "Fevers," it is introduced here, because it should not be confounded with other febrile diseases. There is a common impression that Hectic Fever and Consumption are one and the same thing; but this impression will be corrected when we consider briefly the origin of this fever. It is sometimes intermittent, and sometimes remittent. Often a slight chilliness is felt some time during the day; and this is followed by a febrile re-action, more or less severe, and of a prostrating character Extreme debility may cause a fever of this kind to spring into existence; and, under such circumstances, it may take the form of a low nervous fever, very slow, and wearing upon the nutritive system. But Hectic Fevers show themselves where there are local chronic inflammations and suppurations, as in the case of abscesses, carbuncles, &c. They are sometimes caused by grief, or emotions of any kind. They are caused by the loss of animal fluids; or they may supervene upon any prostrated condition brought on by acute disease. They result also from Scrofula and Syphilis, and from the poisonous influences of *Quinia* or mercurial medicines. It is probable, therefore, that Hectic Fever, taken in time, is curable, provided the organic lesions

on which it depends are not of a fatal or incurable kind. That which usually accompanies pulmonary tubercles can only be overcome by curing the Tuberculosis of the lungs. We will proceed to specify the treatment according to particular indications. Those springing from debility, and of a slow nervous fever, require the use of *China* and *Arsenicum*. Give the *China* every time the fever remits or intermits, — a single dose. Give *Arsenicum* in the same way when there is extreme prostration and thirst. Give *Phosphoric acid* when there is diarrhœa. When the fever attends local inflammation, *Arsenicum* may be given, when there is great emaciation and debility, with palpitation of the heart, hot, dry skin, and night-sweats; *Calcarea*, when there is constant heat and little thirst, frequent flushes of heat, especially in the evening, with red cheeks. *Calcarea* is also indicated when there is loss of appetite, great debility and emaciation, and also paroxysms of anguish. *China* is indicated when there is great paleness, sunken cheeks and eyes, great listlessness, dry and flaccid skin, great hunger, or else loss of appetite, and a tendency to Diarrhœa. For Hectic Fever brought on by emotions or grief, give *Phosphoric acid*, followed by *Capsicum* when there is painless diarrhœa, sad, oppressed mood, febrile heat in the evening, and sweat towards morning Give *Ignatia* when the patient weeps during the fever, and has much heat in the palms of the hands. Give *Graphites* when the patient is pale, and the heart is prone to palpitate. If the fever is produced by debilitating losses, give *China* when from hemorrhage; give *Nux vomica* when from sexual excesses; *Phosphoric acid* when from diarrhœa, and there is accelerated pulse, anguish, and sweats in the morning. When the fever comes on after Dysentery or Typhus Fever or Cholera, give *Arsenicum*, if there are dysenteric discharges, and if the patient is greatly emaciated, and has laborious breathing, with debility and palpitation and thirst, obliging one to drink frequently. Give *Cocculus* when Hectic Fever sets in after Typhus, when there is great debility, and trembling after the least exertion, blue margins around the eyes, dry mouth, and loss of appetite, oppression of the chest, and with great sadness and anguish. Give *Veratrum album* when hectic comes on after Cholera, if there is great weakness, or cramps, or pain in the back of the head during the fever. When Syphilis is attended with Hectic Fever, and if the patient has taken much Mercury, give *Aurum mur.* or *Stannum*, when there is great emaciation, and pains in the bones, and loss of appetite. *Nitric acid* may be given when the hectic fever has been brought on by mercurial medicines, and when there is great dryness of the throat, and varices of the tongue. In many cases of Hectic Fever springing up like those named above, a careful selection of the remedy, and corresponding adaptation of diet and regimen, will bring about a large proportion of cures. Persons suffering from any form of Hectic Fever should be kept in an atmosphere of uniform temperature, — from 68° to 70° Farenheit, and should be supplied with generous food when the appetite will take it, and in some cases the best of grape wine.

Night-Sweats.

If night-sweats break out in particular diseases, they do not require any special consideration, unless it happens to be one of the most promi-

nent symptoms; in which case, it may constitute an important indication for the selection of a remedy. A profuse perspiration of this kind which affords no relief indicates *Mercurius* or *China*. Exhausting night-sweats in the case of persons that have become weakened by disease or other causes, point to *Carbo. vegetabilis*, *Veratrum album*, *Sulphur*. But there are individuals, who appear to be well enough otherwise, who perspire copiously every night, and sometimes so profusely as to wet the bed-clothing. It would seem that sleep induced some kind of labor that wrought the system up to this pitch of perspiration. It is said to be most common with corpulent persons. Such cases as only exhibit the one symptom of sweating for consideration, must be treated as follows: When one begins to sweat as soon as he lies down to rest at night, *Arsenicum* may be administered. When he fails to sweat so long as he keeps awake, give *Hepar*, if he is corpulent; or *Calcarea* if he finds the sweats to diminish his strength. If exercise of mind sets him to perspiring after getting into bed, give *Nux vomica*, if there is a sanguine temperament. If the person is a good feeder, and eats heartily, and has these prostrating sweats at night, let him eat less, and take *Pulsatilla*. Exhausting night-sweats that occur after fatigue require *Arnica* and *China*. If after severe mental labor, give *Cocculus* or *Nux vomica*. If from no cause that can be determined, *Carbo. animalis*. When no fever precedes one of these exhausting sweats, and there is great debility after, *China*, *Ferrum*, and *Graphites* are appropriate remedies. For the exhausting night-sweats that occur after masturbation, *China* is also the remedy. If there is uncomfortable feeling about the head, — a dull feeling, — give *Phosphoric acid*. Those night-sweats that occur after excessive sexual indulgence require *China*, *Arsenicum*, and *Graphites*. For morbid sweats in general, *Arsenicum*, *Arnica*, *Bryonia*, *China*, *Ferrum*, *Graphites*, *Helleborus nig.*, *Hyoscyamus*, *Ignatia*, *Mercurius*, *Nux vomica*, and *Sulphur* may be consulted.

Pulmonary Consumption.

There is reason for a distinct monograph upon this disease. Much that can be done to ward off the disease by domestic treatment should be done; and, therefore, to point out a plain description and treatment of the incipient stage is at least desirable. The cause of Consumption may be hereditary taint or overpowering influences that break down the strongest constitutions. When hereditary, it frequently exists as a predisponent in the system until aroused by some exciting cause. It is therefore of the first importance to become familiar with the means of protecting one thus disposed from surrounding influences that may develop the hereditary taint. When a child of consumptive parents appears to thrive well and grow, betraying no signs of disease, it is well to keep him surrounded by such atmosphere, food, and clothing, as contribute to his healthy development, until the age of puberty. It is at this period that changes occur, more or less fraught with danger. With the male, there is danger of arousing any latent tendency to pulmonary tubercles; with the female, there is danger of the menstrual function becoming so feebly developed, that it acts as an excitant upon any latent discrasia of the blood. Treat

ment is therefore required at this period, not only to obviate any derangement consequent upon its occurrence, but to aid a burthened system in bringing about this physiological change, so as to answer all the demands upon it. Separate beds should be insisted upon.

For males at the age of puberty, children of scrofulous parents, give a dose of *Calc. carb.* twice a week, and restrict them to a strictly nutritious diet, free from fat or gravy. In case of their being children of parents who had tubercular disease of the lungs, give them *Lycopodium* twice a week, or perhaps *Graphites*, and direct for them a good diet of animal and vegetable food; let them avoid exposure to extremes of temperature; let them sleep in well-ventilated apartments: and any hereditary tendency to Consumption can be overcome. Should a cough ensue upon the period of pubescence, give *Lycopodium* or *Calcarea;* if a short, hacking cough, give *Phosphorus;* if a tickling cough, give *Pulsatilla* or *Sepia.* By thus watching the first development of cough, and by giving the appropriate remedy at once, the same can be cured. In females, when there is great debility of the chest, and sometimes a slight bleeding occasioned by a trifling cough, give *Sauro cerasus.* Thus, by noting the slightest development of cough at this period, and by being prompt in selecting the appropriate remedy, this incipient form of Consumption can be cured, and sound health be established, and will remain until some other revolution occurs to unsettle the system. Any excesses on the part of the male must be avoided. Whatever weakens or deteriorates any of the functions may prove an exciting cause, so long as there is any predisposing influence in the system. On the part of females, there is danger at the period of the first pregnancy. This revolution will either make further improvements in the direction of sound health, or it will arouse unfavorable influences that depress and ruin it. Thus it may seem plain that Consumption may be successfully treated in its incipient stage, whether it shows itself early or late in life. If there is indication of its approach after a fever, give *China;* if after excessive fatigue, give *Lycopodium* or *Stannum.* If excessive venery causes a development of consumptive symptoms, give *Arsenicum* or *China;* if the shock of labor produces depressing effects, give *Arnica*, *China*, and *Arsenicum;* and if cough ensues, give *Bryonia* or *Phosphorus*, and a well-regulated diet. It is believed, that, in a majority of instances, Hereditary Consumption can be erased from the family record by carefully waging a warfare upon the first approach of the enemy.

But a different aspect presents itself in that form of Consumption which comes on by reason of a good constitution having been overtaxed and worn out. A cold, badly treated, may leave behind a permanent irritation even upon the most naturally healthy constitutions. A cough from a cold is not to be trifled with; therefore, attend to the slightest cough. *Nux vomica* may remove a cough brought on by a cold, if given at once; a dry, hollow, or hoarse cough may be cured with *Hepar sulph.;* a cough with heat of the chest and soreness of the lungs may be cured with *Bryonia.* Long exposure to cold that chills the whole system may be followed by a violent fever that fixes itself upon the lungs, producing violent inflammation; and this, if improperly treated, may end in Consumption. Almost any acute disease, badly treated, may terminate

in fatal Consumption; therefore, when any interruption occurs in the function of respiration, it is more or less dangerous. The slighter the interruption the better, and the more easily can it be removed. But it must not be neglected. An exceedingly slight capillary congestion, if neglected, may become chronic, and end in Tuberculous Consumption; a slight bronchial disturbance, not properly treated, may terminate in Bronchial Consumption: in short, any of the ailments of a trivial character, which can be made worse by neglect, may demand the most careful treatment, or otherwise they may terminate in Consumption.

Influenza, or **Grippe,** comes on like a cold, with sneezing or snivelling, pain in the chest, and a general appearance of Catarrh. Too frequently it has been neglected in the first stage, and it has run into the chronic form of Bronchitis, and thence into Consumption. Such being the known tendency, it is well to seek the best of treatment for this disease at once. *Arsenicum*, in the incipient stage, will relieve some of the symptoms: it will relieve the thin discharge from the nose and eyes, the pain in the limbs, and general aching in the bones. *Euphrasia* relieves many cases in the beginning which resemble *Arsenicum*. *Mercurius viv.* is also a fine remedy for the stoppage of the nose, eyes, and general restlessnes of the whole system. Influenza has been reckoned among the causes of Consumption, because, in many instances, it has been the means of calling into action certain latent tendencies that have ever been dormant until set upon by this exciting cause. Influenza is but an acute form of Bronchitis, and as such it must be treated. *Aconite* may be given if there is a quick, full pulse. After *Aconite* has softened the pulse, and produced moisture upon the skin, if the head continues to ache, give *Belladonna;* if there is soreness of the throat, give *Merc viv.;* if much thirst, *Arsenicum;* if pains in the back and loins, *Nux vomica* In females, *Pulsatilla* may remedy many of the derangements which influenza produces. If a sudden check of menstruation supervenes upon an attack of this disease, give *Aconite*, and follow with *Pulsatilla;* and, finally, if influenza shows itself in an epidemic form, and almost every man, woman and child become victims, *Aconite*, *Belladonna*, *Mercurius*, and *Nux vom.*, or else *Arsenicum*, *Apis mel.*, *Bryonia*, *Calcarea carb.*, *Phosphorus*, and *Sulphur*, may constitute the group from which is to be selected a remedy, according to symptoms. It is an old saying, with regard to diet, "to starve a fever, and stuff a cold;" but all proverbs are not true. There is, in every cold, some degree of fever that must be heeded, because a too generous diet would be likely to do harm. A moderate diet of black tea, rice, barley, toast, and fruit, is best. Thus, by judicious medication and an appropriate diet, there need be no sequel that causes the patient to sink rapidly into the grave. If otherwise, it will arouse some constitutional diathesis, and this will render the joint action formidable in the extreme. As in Tubercular Consumption, or, rather, in that which is hereditary, a constant vigilance is required to put in action certain antagonistic influences to overpower the disease, so in Bronchial Consumption, or that which is generated by a succession of ailments that implicate, in a less or greater degree, the mucous membrane that lines the bronchial tubes, an effort must be made to bring any and every assault upon the bronchia to a successful termination, — whether a common cold, a trivial cough, a slight soreness upon the air-passages, or even Pneumonia: let each be treated persistently, accord-

ing to symptoms, until perfectly cured, so as to leave no entailment in the form of a sequel, to prey upon the constitution. Hygienic treatment must correspond with the administration of remedies. Well-ventilated apartments, sufficient clothing, and good, nourishing food, cannot fail of putting the system in a favorable condition for recovery. Regular sleep, regular meals, and a well-regulated temperature, are things indispensable

Weakness of the Sight. — *Amblyopia.*

The term Amblyopia signifies a weakness or morbid alteration of sight; and there is every grade, from mere dimness of vision to complete blindness. A sense so important as that of sight is entitled to a distinct consideration, inasmuch as a variety of causes may operate to impair it. The difficulty may be attended with many morbid conditions of the organism, and a variety of remedies may be required to treat the affection. We will therefore point out the treatment for the various grades, in order. For Simple Weakness of Sight in plethoric persons, give *Belladonna;* for scrofulous individuals, *Calcarea;* for weak or debilitated individuals, *China;* for nervous persons, *Hyoscyamus.* For those whose sight is impaired from biliary derangement, *Sepia* or *Sulphur.* For Incipient Amaurosis, *Aurum*, *Sepia*, *Sulphur.* For Complete Amaurosis, not incurable, give *Belladonna* to persons of full habit; *Calcarea* to persons who have a scrofulous tendency; *Mercurius*, for those suffering from hepatic derangement; *Phosphorus*, for those suffering from catarrhal affections; and for those subject to sick headache, *Sepia.* For Torpid Weakness of Sight, *Phosphoric acid.* For weakness of sight brought on by fine work, give *Belladonna* or *Ruta.* For that which occurs from old age, give *Baryta carb.*, *Opium*, or *Secale cornutum.* Where weakness of vision occurs after suppression of the menses, or hemorrhoids, give *Pulsatilla* or *Lycopodium.* For that occasioned by suppression of Measles, *Causticum*, *Stramonium*, or *Sulphur.* For that supervening upon Rheumatism, give *Belladonna*, *Pulsatilla*, or *Rhus tox.* For that attendant on Gout, give *Nux vom.* or *Colchicum.* For that caused by the abuse of mercury, give *Nitric acid.* For that caused by worms, give *Cina.* For that occasioned by Diarrhœa, give *Merc. viv.* For that brought on by loss of blood, *China.* For that produced by Scrofula, give *Arsenicum*, *Calcarea*, or *Nitric acid.* When produced by cold in the eyes, *Dulcamara* or *Nux vomica.* That produced by blows or concussions requires *Arnica*, *Ruta*, *Euphrasia.* The remedies chosen must not be repeated oftener than once a day. When weakness of sight is attended with nervous headache, give *Aurum*, *Belladonna*, *Bryonia*, *Sepia*, or *Sulphur.* If by congestion of blood to the head, give *Belladonna*, *China*, and *Phosphorus.* For that attendant on deafness, or noises, give *Cicuta*, *Nitric acid*, or *Pulsatilla.* The remedies need not be repeated more frequently than once or twice in twenty-four hours. If weakness of vision is attended by gastric or abdominal ailments, give *Cocculus*, *Nux vom.*, *Ignatia*, or *Pulsatilla.* If attended by derangements of the womb, give *Calcarea* or *Sepia.* If by pulmonary complaints, give *Phosphorus*, *Lycopodium*, *Calcarea*, and *Sulphur.* If by disease of the

heart, *Lachesis*, *Phosphorus*, *Pulsatilla*, *Sepia*, and *Spigelia*. If by Epilepsy, Spasm, or Hysteria, *Hyoscyamus*, *Opium*, *Stramonium*, or *Sulphur*. The remedy may be repeated, if necessary, every twenty-four hours.

The particular indications for several of the remedies may be stated as follows: *Aurum*, for black spots or scintillations, or half-sightedness, or tensive pain in the eyes, or in case of sudden attack after Scarlet Fever, or during confinement after delivery. *Belladonna* for dilated pupils, or insensible pupils, spasmodic twitching of the lids, or mist before the eyes, aching and distensive pains in the orbits and forehead, and red face. *Calcarea*, for mistiness of sight, as if gauze were before the eyes, especially when reading; for dilated pupils, and for pressure or feeling of coldness in the eyes. *Causticum*, for sudden and frequent loss of sight, with sensation as if something were stretched over the eyes, or for *dim-sightedness*, as if looking through a veil or mist. *China*, for weak sight: the patient only sees the outlines of things near him; letters look pale, and appear to be surrounded by white borders; dilated and not very sensible pupils; dimness of the cornea, as if the eyes were filled with smoke, or black motes. The eyes feel better after sleeping. *Cicuta*, is indicated when the sight frequently vanishes, and when there is vertigo or absent-mindedness, or aching pains in the orbits. *Cina*, for dimness of sight improved by wiping the eyes, and for pressure in the eyes when reading, as if sand had got in. *Cimicifuga*, when there is aching pain in the centre of both eyeballs, and black specks before the eyes. *Drosera*, for frequent vanishing of sight, or when the eyes are dazzled with the glare of light or of fire. *Gelseminum*, when there is a thirst for light after Apoplexy, or Congestion of the Brain. *Hyoscyamus*, for squinting, illusory sight, and stupefying pains over the eyes. *Mercurius*, for paroxysms of momentary blindness, sensitiveness of the eyes to light or the glare of fire. *Nux vomica*, for red face and sensitiveness of the eyes to light only in the morning. *Phosphorus*, for paroxysms of sensations as if things are covered with a gray veil. *Pulsatilla*, for paleness of the face, and disposition to vomit, and a sensation as if dimness of sight could be removed by wiping; for frequent and copious flow of tears, and contraction of the pupils. *Ruta*, for mistiness of sight, and boring pains in the orbits, and the filling of the eyes with water in the open air. *Sepia*, for dimness of sight when at work, stripes before the eyes and aching pains in the eyeballs, with sick headache. *Silicea*, paroxysms of sudden obscuration of sight, as if a colored veil were before the eyes. *Sulphur*, for *general* mistiness of sight, as if looking through feather-dust or black *gauze;* great dryness of the eyes. *Veratrum album*, for profuse shedding of tears, or the copious filling of the eyes with water. *Veratrum viride*, when walking brings on blindness, with fainting vertigo and dilated pupils. When any one of the remedies is indicated, let the dose be repeated only once in twenty-four hours. In all affections of the sight, the patient should avoid hearty meals or excessive overloading of the stomach; he should be regular in his habits, and free as possible from mental anxiety; and, above all, his habits should be strictly temperate, and late hours should be avoided. In most cases of defective sight, the eyes require rest. An attempt to exercise them in reading in any defective light is pernicious; and so is prolonged reading in any light.

Paralysis of the Eyelids. — *Blepharoplegia.*

This affection sometimes occurs in children, but very rarely in adults, and requires remedial treatment. The best remedies are *Belladonna*, *Spigelia*, *Sepia*, and *Stramonium*. *Belladonna*, if there is redness of the face; *Spigelia*, if there is any sign of spasms; *Sepia*, if it follows severe headache, and sickness of the stomach; *Stramonium*, if there is pale face, and inclination to sleep. *Causticum* for chronic cases.

Whooping-Cough. — *Tussis Spasmodica.*

Among the diseases of children, we find this malady quite common. The cause is only conjectured. As it is a disease much dreaded by parents, we shall not only be particular in describing the disease, but also in pointing out the remedies for the various stages and complications. The cough begins in the form of an ordinary catarrh arising from a cold. The child has coryza, and coughs; the mother or nurse may be aware that the disease commences in this way, and their fears may be that it will turn out Whooping-Cough. The catarrhal stage may last ten days or two weeks, and then a different and characteristic cough sets in. This cough comes on in paroxysms, in which a number of rapid expirations follow each other, as in the act of coughing, and with much violence, and without any intervening inspiration, till the patient turns black in the face, and seems on the point of being suffocated; then one long-drawn act of inspiration takes place, attended with that peculiar rough, crowing noise, which is denominated a whoop, and gives the disease its name. Immediately after this long-drawn inspiration, a series of short expiratory coughs, repeated till the breath is almost exhausted; and then a second whoop, until a white glary mucus is thrown up, and this ends the paroxysm. After a lapse of some little time, the paroxysm will be repeated. During the urgency of some of these paroxysms, the face becomes red and swollen, the nose bleeds, the eyes start from the sockets, the little sufferer stamps with impatience, and clings to some object near him; and this frenzy continues till vomiting or expectoration ends the paroxysm. The victim pants a little while, and appears quite well again, and begins to have a craving for food. The number of paroxysms that occur every twenty-four hours varies in different subjects. Children are very susceptible to the disease, and it spreads by *contagion*. The ordinary duration of the disease is from six weeks to three months; but it may run its course in three weeks, and sometimes not for four or five months.

As long as this disease is uncomplicated, — unmixed with inflammation, and therefore without fever, or with that slight inflammatory condition proper to a mild catarrh, — it is not a *dangerous disease*. In all probability, it will run its course under the most favorable circumstances How much it can be abridged by appropriate remedies is yet a question, but the violence of the disease may be moderated, its sequel may be guarded against, and its complications may be tempered, by the right use of remedies. The most favorable season for the disease to rage is in the

spring, when the weather is becoming warmer. The most unfavorable is late in the fall, when the weather is augmenting in coldness. Cold or damp weather is thought to protract the disease, and warm weather to abridge it. We have thus been somewhat particular in describing this malady, in order to facilitate its treatment by mothers and nurses. We will now proceed to direct the use of appropriate remedies. In the catarrhal stage, give *Aconite*. If there is fulness of the nose, and headache, give *Belladonna*. In case of asthmatic breathing, give *Ipecac*. *Aconite* is the remedy for a dry, wheezing cough, with fever or burning pain in the larynx, or windpipe. *Belladonna* is the remedy for severe paroxysms, with congestion of blood to the head, expectoration of blood, and bleeding from the nose, the eyes appear congested, involuntary stool and urine, and also when the paroxysm is announced with crying, which arises from pain in the stomach, but not accompanied by vomiting. Also, in the first stage, *Carbo veg.* may be given when the cough is convulsive, especially in the evening, and when there is great exhaustion after each coughing-spell. *Dulcamara* is a good remedy when the cough is moist from the commencement. *Ipecac.* for the incipient stage, when the child has coughing-spells so rapid as not to be able to get his breath, and when the open air is requisite to relieve him. *Pulsatilla* is useful when the cough is loose from the beginning, and worse towards evening. In the second stage, after whooping sets in, with vomiting, and bleeding from the nose and mouth, give *Caulophyllum*. If without bleeding at the nose, give *Drosera*. If the children suddenly become rigid, give *Cina*. This remedy is specific when children are affected with the usual worm symptoms, and the paroxysm is followed by a gurgling noise from the abdomen. *Corallia rubrum* is believed to be a sure remedy for violent spasmodic cough; short, barking cough all day, and towards evening becoming violent and spasmodic. *Cuprum* is indicated when every paroxysm is attended with cataleptic fits, so that in most every paroxysm the child appears as dead. *Veratrum* is very suitable after *Cuprum*. *Drosera* is the remedy when the paroxysms come on at midnight, and cease before noon, and are very severe and suffocating. *Veratrum album* is indicated, after *Drosera* and *Cuprum* have been employed, when the patient is very feeble, quick pulse, and with a sort of hectic fever, and cold sweat upon the forehead, and great thirst; and also when the coughing causes an emission of urine, and pain in the chest and loins, and when the patient, between the paroxysms, is in a comatose state, and cares not either to move or converse; and also when there is excessive weakness of the neck, so that the victim is scarcely able to keep the head erect; and also when there is rash over the body, or face and hands. For the most severe or convulsive stage of whooping-cough, give *Belladonna*, when there is pain in the head, or convulsions; give *Bryonia* when the child coughs immediately after eating or drinking, and vomits what he has eaten, and returns immediately to finish his meal, and then coughs and vomits again; give *Chamomilla* when the cough and vomiting are more frequent during a meal, fretful disposition, and worse at night; give *Causticum* when the cough is better, and when it is dry and hollow; give *Hyoscyamus* when the patient is worse lying down, and better on sitting up; give *Arnica*

when the patient feels sore from coughing. After the cough subsides, and there is any sequel left behind, give whatever remedy is indicated; as *Aconite* for fever, *Nux vom.* for constipation, *Phosphorus* for catarrh, *China* for extreme weakness, &c. If there is no loss of appetite, allow a substantial diet in all the stages of the disease. Change of air is very beneficial, even if but a short journey from home, especially to the sea-shore.

AFFECTIONS OF THE MIND.

It is well known to physiologists, that soundness of mind, as well as entire soundness of body, indicates a condition of perfect health. The two are so intimately blended, that one can hardly exist without the other, and *vice versâ*. An unsound condition of the physical system is often attended with manifest unsoundness of mind. It is not intended to include the mental phenomena frequently attendant on acute fevers, as in Nervous, Scarlet, and other fevers, but such only as appear to exist as the chief symptom of disturbance in the entire system; and we will begin with simple

Mental Derangement.

What is understood by mental derangement is a disordered mind, which may have been occasioned by one or more of a variety of causes It is indicated by irrational expressions of illusory notions, incoherent ideas, strange fancies, and not unfrequently by vicious inclinations. There is, nevertheless, some specific cause for every case of mental alienation that occurs; and the treatment has to be adapted with reference to the cause, when there is a chain of circumstances that indicates it. Nevertheless, the cause is not always apparent, and therefore particular symptoms must be our guide in affiliating remedies. When insanity takes the form of rage, and the patient appears to be governed by angry and revengeful feelings, and is inclined to utter imprecations and threats towards his best friends, give *Aconite* in daily doses. If his face appears flushed, and his eyes suffused, and exhibit a fiery red appearance, give *Belladonna*. If in a scrofulous subject, give *Calcarea*. If strange fancies seem to beset the patient, or complaints are made of illusory sights, give *Hyoscyamus*. If the patient is inclined to run away from home, or hide in some secret place, give a dose of *Sulphur*, and follow with a few doses of *Stramonium* every three or four hours. If the patient seems depressed, and sighs frequently, give *Lachesis*. If much distress is evinced, and there is defective nutrition give *Nux vomica*. For violent rage, followed by soporific sleep, give *Opium*. If the patient *laughs* and talks continually, give *Hyoscyamus*, or if given to crying, sobbing, or constant weeping, give *Ignatia*. If

the patient is subject to cold sweats, give *Veratrum*. If thirsty, give *Arsenicum*. If there is great weakness and prostration, give *China*. If, during paroxysms of rage, there is intense perspiration, give *Mercurius*. Disposition to suicide, *Aurum*. None of the medicines need be repeated oftener than twice a day. Great care should be taken to keep the stomach of the patient at ease, by furnishing for it light but nutritious food.

Mania Produced by Depression of Spirits.

Protracted Grief.—Extreme mortification or chagrin, or intense anger, may end in mental derangement. When grief wears out the mind, and strange fancies begin to show themselves, give *Ignatia*. When great mortification on account of some exposure to censure, or on account of some humbling of family pride, give *Phos. acid*. When disappointment unsettles the mind, and chagrin gives rise to insane imaginings, give *Pulsatilla;* or, if there is a manifest inclination to hide away from friends, give *Sulphur*, and follow, in four or six hours, with a dose of *Hyoscyamus*. If the face is red, and the temples beat and throb, give *Belladonna*. When excessive anger and general moroseness of spirit ensue, with general antipathy towards every one, give *Sulphur*, and, in six hours, follow with a few doses of *Nux vomica*.

Mania from Excited Emotions.

The mind is often beset with emotions of one kind or another, that often tend to unsettle and derange it. Anguish or foreboding often has this disastrous effect, and one of the principal remedies is *Aconite*. If there is an attending inclination to weep, give *Ignatia*. If there is dulness or stupor, give *Opium*, or if in females, give *Pulsatilla*. If mania is produced by fright, give *Aconite*, *Coffea*, or *Nux vom*. When fear unsettles the mind, give *Lachesis*, *Hyoscyamus*, *Gelsemium*, *Opium*, or *Pulsatilla*. When excessive joy produces derangement of the mental faculties, and gives rise to strange fancies, give *Coffea*, *Opium*, or *Pulsatilla*. When homesickness unsettles the mind, give *Phos. acid*. When fancied neglect of friends distracts the imagination, give *Causticum* or *Capsicum*. For unhappy love, and the derangement of mind consequent thereon, give *Hyoscyamus*, *Ignatia*, or *Phosphoric acid*, or perhaps *Coffea*, or *Nux vom*.

If disappointed affection, or any cause, produces the mania of suicide, give *Aurum*. If excessive jealousy ends in mania, give *Hyoscyamus*. If rage ensues upon insults, give *Veratrum alb.*, *Belladonna*, or *Chamomilla;* if upon contradiction, give *Aconite*, and afterwards *Ignatia* or *Nux vom*. For the concomitant symptoms of insanity from excited emotions, give *Aconite* when there is headache, feverish heat, or tendency of blood to the head. Give *Belladonna* when there is loss of consciousness, or constant anxiety, with fear, weeping, howling, and malice (in children), and also when *Aconite* and *Opium* had proved insufficient for the consequences of fright. Give *Bryonia* when there is chilliness and shuddering over the whole body, great tendency to vehement anger, loss of appetite, nausea, vomiting, and bilious state in consequence of anger. Give *Cap*

sicum for sleeplessness caused by homesickness, with heat and redness of the cheeks. Give *Chamomilla* when anger produces bitter taste of the mouth, nausea, disposition to start, and vomiting of bilious matter. Give *Coffea* when there is much nervous excitement after great joy. Give *Colocynth* when chagrin or mortification produces Spasmodic Colic, or cramps. Should this condition persist, give *Causticum*. Give *Hyoscyamus* when fear produces stupefaction or convulsions, involuntary laughter during sleep, or a desire to run away. Give *Ignatia* for grief, disappointment or unhappy love, when there is deep, gnawing, irresistible grief, vomiting, headache, vertigo, pale face, convulsions, or epilepsy, and in children when they occur from the shock of fright or fear. When homesickness, fright, or mortification is attended with great anguish, restlessness, and trembling, or sudden starting from sleep, or accelerated circulation on the least exertion, sleeplessness, and inability to bear the warmth of the bed, great nervousness, a disposition to be quarrelsome, and to complain of everybody as being hateful, and the patient takes a dislike to his own family, and wishes to leave them, and also when there is shivering and night sweats, give *Mercurius*. Give *Nux vomica*, when, after an angry fit, there is chilliness without heat. Give *Opium* when diarrhœa follows excessive joy or fear, or when a sudden start or fright produces sudden and involuntary diarrhœa, with heaviness of the abdomen. For chronic diarrhœa from fright, *Gelsemium*. Give *Phosphoric acid* in all cases after deep grief, homesickness, or unhappy love, when the patient is taciturn, dull, or listless, and has a constant desire to sleep, and has night-sweats towards morning, after hectic fever in the evening. Give *Pulsatilla* when fear produces cold hands and feet. Give *Veratrum album* when any emotional excitement produces diarrhœa or involuntary evacuations from the bowels, with coldness of the whole abdomen.

Morbid Emotions.

A celebrated writer on insanity considers all morbid emotions under this head, and for this reason: that all morbid states of the mind may become so augmented as to result in complete Mania or Monomania. It is, therefore, well to understand the best method of bringing remedial action to bear upon the first departure from sound health of any faculty or emotion of mind. For anguish or anxiety, no remedy seems better adapted than *Arsenicum*, to be given morning and evening, or, perhaps, *Pulsatilla* for females at the menstrual period, or *Veratrum album* for very weak and exhausted persons. For apprehension or fear, give *Aconite* morning and evening, especially if the sufferer is a plethoric, full-blooded person. Give *Belladonna* to one who suffers much from headache, or rush of blood to the head; or *Bryonia* if there is anxiety, with heat of the chest and difficult respiration; or *Hyoscyamus* for anxiety about one's safety, or religious anxiety; or *Opium* for a kind of anguish and depression of spirits that confuses one's ideas, and is attended by a stupidity and headache. When one is constantly vexed and irritable, it may be inferred that a corresponding physical condition requires *Arsenicum* once or twice a day, or perhaps *Nux vomica*. *Ignatia* is suitable when there is a tendency to be vexed, and to weep on account of trifles. For one

always in haste to get angry without reason, give *Aurum* or *Sulphur*. When one is morbidly suspicious and distrustful, and, in fact, is a hater of his fellow-men, and wishes to avoid every one, and to spend his time in seclusion, give *Arsenicum*, *Hyoscyamus*, *Pulsatilla*, or *Rhus tox*. For nervous excitement, which may lead to mental derangement, give *Aconite* or *Pulsatilla;* and especially if there is great tendency to start. For a morbidly malicious disposition, give *Belladonna*, *Hyoscyamus*, and *Lachesis*. For a disposition to kill somebody, or to commit acts of violence, give *Stramonium*, *Belladonna*, or *Veratrum album*, morning and evening until a change. For a morbid disposition to be audacious or impertinent, give *Ignatia*, *Opium*, or *Sulphur*. For headstrong obstinacy, and disposition to be quarrelsome, give *Belladonna*, *Nux vomica*, *Ignatia*, *Lachesis*, and *Veratrum*. For an artful disposition, or an involuntary disposition to practise deception with no definable motive, give *Lachesis* and *Nux vomica*. When the mind is either beset with fancies or fixed ideas, give *Belladonna*, *Cocculus*, *Stramonium*, or *Sulphur*. For sad and melancholic fancies and forebodings, give *Calcarea*, *China*, or *Pulsatilla*, and *Petroleum*. For a morbidly serious, silent, and untalkative disposition, give *Belladonna*, *Hyoscyamus*, and *Pulsatilla*. For morbid indifference and apathy, give *Arsenicum* morning and evening, or else *Phosphoric acid*, *Sepia*, and *Sulphur*, in daily doses. Moaning and lamenting without any special cause indicates a degree of insanity that demands prompt attention; and *Hyoscyamus* may be given three times a day, or else *Chamomilla*, *Coffea*, or *Ignatia*. Despondency, despair, and being tired of life, as well as an inclination to suicide, are severally affections of the mind that are subject to medical treatment. *Arsenicum* may be given morning and evening for despair; *Lachesis* for *despondency*, especially where there is sighing, as if something awful was weighing upon the mind. For inclination to commit suicide, give *Aurum* and *Arsenicum*, especially if there is great anguish, melancholy, and morbid disgust of life. For one simply tired of life, and anxious to get out of this world by natural death, give *China*, *Lachesis*, or *Nitric acid*. For illusions, and illusory notions, showing mental difficulties, give *Lachesis*, *China*, or *Pulsatilla*. Many of these mental difficulties are the result of selfishness or mortified self-love, and can be overcome by strong determination of the will and moral training, which, of course, involves more or less of self denial.

Religious Mania.

This mental affection is simply a morbid excitation of religious sentiment and feelings, producing strange and fanciful ideas of God, heaven, and the importance of certain missions to which the victims believe themselves specially called. Religious Mania is characterized by morbid inclination to be always singing, praying, preaching, and performing religious rites, out of time and place, and in a disconnected and incoherent manner. The cause of this mental affection may be excitement upon religious topics, or during what is ordinarily termed religious revivals. The effect of any thing of the kind is to unsettle the healthy condition of the nerves and that of the nutritive system. For Religious Mania in

general, give *Hyoscyamus* or *Stramonium;* for that which is attended with indigestion, give *Nux vomica;* for that which is accompanied by torpidity of the liver and melancholic temper, give *Arsenicum*, *Mercurius*, *Podophyllin*, and *Ignatia.* Let the patient avoid all surroundings calculated to unsettle the mind or emotions.

Hypochondria. — *Hypochondriasis.*

Pinel classes Hypochondria among the various forms of insanity, as it is characterized by morbid imaginings concerning one's health. Sometimes the victim imagines himself void of strength, or sadly diseased at the heart; he fancies he sees death staring him in the face, and believes himself often in a dying condition, when, in fact, there is not the slightest reason for such apprehension. In the future, all is darkness: the next hour, the next day, week, or year, is believed by him to be pregnant with something awful. He never enjoys a laugh, for every thing is clothed in gloom. If the subject is of a bilious temperament, and has black hair and eyes, give *Mercurius;* if of a lymphatic temperament, and inclined to obesity, give *Pulsatilla;* if of a sanguine temperament, and has red hair and blue eyes, give *Nux vom.;* if addicted to the use of intoxicating liquors, give *Arsenicum* or *Nux vom.;* if of a downcast countenance, and subject to indigestion, give *Nux vomica*, *Lycopodium*, or *Petroleum.* If caused by sexual abuse, give *China* or *Sulphur;* when caused by sedentary habits, *Nux vomica* and *Sulphur,* or if by derangement of the abdominal functions, and constipation, give *Calcarea*, *Lachesis*, or *Lycopodium;* for one suffering from languor, mental dulness, or mental distress and discouragement, give *China.* If the victim has the fixed idea that he is unhappy and has no friends, and imagines himself surrounded by enemies, *China* is also the remedy. For a hypochondriac troubled with weak digestion and distension of the abdomen, ill-humor and indolence after eating, give *China;* when he laments on account of the future, and desires to be alone, give *Natrum muriaticum;* when he is beset with ill-humor, despondency, and aversion to life, give *Nux vomica;* when with painful anxiety of mind and lowness of spirits, *Sulphur;* when he has great dread of death, and is in restless, whining mood, give *Aurum;* if indifferent about his business or his own family, give *Sepia.* Any of the remedies named may be given three times a day.

Weak Memory.

There are many conditions of the physical system that may operate to impair the memory; the most prominent of which are those that produce debility, — such as loss of blood and other animal fluids, and intense application of the mind. When occasioned by the former, give *China*, *Nux vom.*, and *Sulphur*, in daily doses; when by the latter, *Nux vom.*, *Pulsatilla*, or *Sulphur;* if caused by external injuries, give *Arnica* or *Rhus;* if by inebriation, *Arsenicum*, *Opium*, or *Nux vom;* if caused by violent emotions, as fright, grief, or anger, give *Aconite*, *Opium*, *Phos. acid*; if caused by dampness, give *Carbo veg.*, *Rhus*, *Veratrum album;* if by rush of blood to the head, give *Belladonna.* In nearly all instances of weakness

of the memory, it is connected with some form of debility. That following epileptiform disease requires *Sulphur;* that following childbirth requires *China;* and also weakness of memory following an acute fever, or any other prostrating disease, requires *China*, *Ignatia*, *Nux vom.*, and *Arsenicum.* Give the remedy selected twice a day.

Hysteric Derangement.

The ordinary forms of Hysteria sometimes degenerate into insanity. The nervous system becomes shattered, and such patients become tormented with all kinds of fancies, — sometimes sexual, frivolous, and even foolish. For Hysteric Insanity in general, give *Ignatia*, *Phosphorus*, or *Platina;* or, if attended with uterine derangement, give *Aurum*, *Crocus*, or *Sepia;* for those tormented with excessive sexual fancies, give *Phosphorus*, *Pulsatilla*, or *Platina;* if the patient acts foolishly, with much frivolity and levity, give *Apis mel.;* if fitful, laughing at one time and crying at another, give *Crocus* or *Stramonium;* if there are marked heavings of the chest, give *Phosphorus;* and if the bowels are constipated, persistent, and tedious, give *Lycopodium;* if in any way connected with the menstrual function, give *Pulsatilla;* if the patients are prone to lie and deceive, give *Veratrum album;* when they evince an insane passion for work, give *Lachesis* and *Hyoscyamus;* when full of suspicion and distrust, give *Hyoscyamus*, *Mercurius*, and *Pulsatilla;* if excited excessively in body and mind, give *Aconite* and then *Nux vomica*, after which give *Phosphorus* or *Lachesis;* if disposed to be imperious, and exhibit a passion to order their friends about, give *Lycopodium* or *Cuprum;* if they betray a tricky and malicious disposition, give *Nux vom.;* if there is great obstinacy, give *Belladonna*, *Ignatia;* if disposed to hide or be alone, give *Calcarea;* if, on the contrary, there is a mania for company, and a dread of being alone, give *Arsenicum*, *Lycopodium*, *Phosphorus*, and *Belladonna;* for great loquacity, give *Stramonium;* if excessive mirthfulness, give *Hyoscyamus;* if there is a disposition to obscenity, and a great want of modesty, give *Hyoscyamus*, *Phosphorus*, or *Veratrum;* if there is a great disposition to sing, warble, or whistle, give *Belladonna* or *Stramonium;* if there is a disposition to make faces and cut antics, give *Cuprum* or *Stramonium;* if there is a disposition to scold or swear, give *Lycopodium;* if given to self-importance and pride, give *Cuprum* to men and *Platina* to women. Let whatever remedy is selected be administered twice a day. Diet should be moderate, and easy of digestion.

Imbecility.

Loss of mind, as well as the derangement of its faculties, comes under the head of Mental Difficulties. There are several causes that may operate to destroy the intellect. Epileptic fits will in time render the brain an unfit organ for the mind, and consequently there can be but little power or force in the mental manifestation. A softening of the brain that may supervene upon inflammation is also attended with imbecility. Self-pollution is also a fruitful source of mental weakness. Con-

genital idiocy results from causes not possible to describe; but many a bright child has become the victim of idiocy by the mal-treatment it has had in the nursery. To quiet crying children, resort has been had to a variety of sedatives, instead of exercising patience, to initiate them into sleep and quietness. How often do nurses give poppy, or lettuce-tea, to put a crying infant to sleep, little dreaming that they inflict a permanent injury upon the mind of the child. The effect of paregoric, soothing-sirup, and poppy-cordial is often disastrous, and the source of spasms, fits, or convulsions, that impair the tender textures of the brain so much, that, even if the children live, they are apt to be the victims of imbecility. *Fear* and *fright* also are causes of imbecility. If epilepsy is the cause, give *Cuprum* or *Sulphur*, in daily doses, or else *Belladonna*, *Helleborus*, *Lachesis*, *Hyoscyamus*, or *Opium*. If caused by a softening of the brain, there is not much hope of the patient deriving much benefit from remedies. There is only a bare possibility that the difficulty may be arrested. *Hyoscyamus*, *Sulphur* and *Apis mel.* may do something to ward off total and hopeless idiocy. When imbecility is caused by onanism, give *Arsenicum* or *China* twice a day; when by sexual excesses, give *Nux vomica* every evening, and *Sulphur* every morning; when from the effects of opium, a persistent course of restorative treatment must be decided upon Give *Coffea*, in usual doses, every three hours; give also *Sulphur*, in the full strength of the tincture, in drop doses; also, give *Ammonia carb.*, and when from the use of other narcotics, give *Nux vomica* or *Ignatia*

Monomania.

This term signifies insanity upon a single matter, when in every other respect the mind is sound. When a single idea seizes the mind, and morbidly dwells there, however erroneous, it is difficult to dislodge it. Sometimes a most singular and absurd idea will be cherished; as that one is dead. Dr. William Rush once had a patient in Pennsylvania Hospital, who claimed to be dead; and, after exhausting his ingenuity to convince him of the contrary, he told him abruptly that he was dead, and should be buried; for he would not have his stinking remains there to pollute the *room* any longer. This had the tendency to fire up the anger of the pretended dead man; and, on cooling down, his singular illusion left him. The treatment of monomania is for the most part moral. It is never prudent to contradict the patient, or to show disfavor to any absurd idea that may be besetting him, but rather to indulge him in it. A celebrated French writer on this malady says of a case at the *Maison des Invalides*, that he fancied, that, if he urinated, it would cause a flood; and, after finding that the patient must die unless there was an evacuation of the bladder, the attendant hit upon the idea of crying "Fire!" and exclaiming at the top of his voice that the city was on fire, and wanting in water to extinguish it, said to the patient, "*to let the flood come;*" it was wanted to save the city from ruins: and this appeal had the desired effect. For a mania to kill some one person, under the idea that it must be done, *Arsenicum* has apparently proved to be a remedy. In a case quite similar, *Lachesis* proved of great service. For some of the fixed ideas in monomania,

remedies may have a good effect. When one has the idea of being great above all created beings, give *Aconite* or *Conium*. When one has an idea that he is hated, and his mind appears sound in other respects, give *Aurum* or *Ignatia*. When he is tormented with the idea that his family or friends are all conniving against him, and appears sane on other subjects, give *Sulphur*, and then *Nux vom.* If he seems right on all questions, except that his mind is cogitating theft, so that he has an irresistible inclination to steal when occasion offers, give *Sulphur*, *Pulsatilla*.

INSIDIOUS DISEASES.

Malignant Pustule.

There is sometimes a low and vitiated state of the blood, and so powerfully predisposed to take a malignant, if not a fatal tendency, that a very slight exciting cause will arouse a disturbance not easily quelled. Such is believed to be the origin of what is usually termed "the Malignant Pustule, a small pimple upon the face, regarded of little account by the person," who, unconscious of the vitiated condition of his blood, pinches it and irritates it. It begins to inflame; a determination of all the subtle impurities of the fluid takes place at this spot; and a malignant and disorganizing fever pervades the entire economy, and, if not arrested, it runs a rapid course, and terminates fatally, often in a single day, or before any remedial agent can be brought to bear to arrest the process. Pimples upon the face should never be pinched or squeezed, for fear of inviting inflammation to the spot, that might re-act in calling up or setting fire to a discrasia of a malignant quality. Individuals apparently well in the morning have gone to business, and, ere another morning came round, have found themselves fatally prostrated by this disorder. As soon as suspected, give *Arsenicum* every hour for three or four hours, and then follow with *Nitric acid;* and, if there is any indication of change for the better, *well;* if not, give *Muriatic acid*, or *Lachesis*. Just as soon as any pustule upon the face begins to inflame like a boil, and there are chilly rigors running down the back, retire to bed, take *Arsenicum*, and a change in the febrile condition may take place for the better, and the life of the patient may be saved. When the face begins to swell, and there is delirium, give *Belladonna* every half-hour, to hold in check, if possible, the tendency to the brain. After *Belladonna*, give *Rhus tox*. Very many cases of "the Malignant Pustule" have been cured by a timely resort to proper remedies. But celerity of action is required; one moment's unnecessary delay may be too hazardous for the patient. It is believed that the brain and nervous centres elsewhere are most liable to speedy implication. A resort to such remedies as will guard these will undoubtedly furnish the best protection. Consult *Arsenicum*, *Apis mel.*, *Bell.*, *Graphites*, *Merc.*, *Conium*, and *Sulphur*.

Spotted Fever. — *Febris Petechialis.*

This fever usually begins with great lassitude; the patient feels fatigued, and unable to be about; and then a headache ensues, without much fever; the pulse is not much accelerated, the tongue is coated with a dark or brown coating, nutrition becomes interrupted, and rapid emaciation takes place. After a while, the patient begins to suffer from intense pain in the back and limbs; a cold chill comes over him, and a febrile re-action, that is characterized usually by great thirst, entire loss of appetite, and inclination to vomit. During the febrile excitement, the skin becomes discolored, and red or purple spots appear in great numbers upon the surface of the body. This is believed to be the crisis, and affords an indication of the malignant character of the disease. For the most part, the patient lies in stupor, or perhaps at times evinces a low, muttering delirium, and inclination to pick the bed-clothes. The CAUSE of this fever is supposed to be some malarious poison acting upon the blood. The prognosis, or prospect of the result, is by no means favorable; yet many such cases recover under proper treatment. In the first stage, when the patient is complaining of great weariness and lassitude, give *Arnica* every three hours. When the head begins to ache, give *Belladonna*, and especially if there is any twitching of the muscles, or redness of the eyes. If there is any derangement of the kidneys, following checked perspiration, give *Rhus tox.* For the intense pain in the back, give *Belladonna*, and follow with *Verat. viride.* When the cold chill ensues, and the countenance looks pallid and sunken, give *Carbo vegetabilis.* When the fever appears, and there is thirst, and inclination to vomit, give *Arsenicum*, or perhaps *Veratrum album*, and repeat the remedy every three hours. When the low, muttering delirium shows itself, give *Stramonium.* Let the surface of the body be rubbed gently with a crash or Turkish towel, and wet with tepid water. If the patient becomes quiet, and the spots gradually begin to disappear, and the coating upon the tongue begins to break up, and a normal secretion upon the tongue begins to show itself, — these are signs of convalescence; and then it is well to give *China*, and supply the patient with beef-tea or broth in moderate quantities, and then with something more substantial, as he can bear it.

Cold Fever.

In some parts of the country, there has prevailed endemically a kind of fever which at first makes its appearance with general prostration and coldness of the surface of the entire body. The face appears as cold as marble, the nose pinched, the eyes sunken in their sockets, the tongue covered with a thick white coating, no appetite, but intense thirst. This cold stage lasts for a longer or shorter period; and then it is followed by a febrile re-action, and the entire body becomes intensely heated, the pulse becomes quick and feeble, the head and back become the seat of pain for a while; and then all these symptoms disappear, and another cold, sunken condition of the system ensues, and sometimes the body is covered with a cold perspiration, which lasts for an indefinite period; and then a

more fierce febrile re-action comes on again, and elevates the pulse and temperature of the skin, giving a flushed appearance of the countenance, redness of the eyes, and heat of the head; when a warm perspiration terminates the febrile heat, and then there gradually appears the coldness of the surface again. These alternations of the extremes of temperature upon the surface go on until a crisis occurs that terminates the life of the patient, or the disease begins to wane. But, to mitigate the severity of the disease by treatment, in the cold stage, give *Carbo. veg.* every four hours until the re-action commences, and then give *Bryonia* or *Rhus;* and these remedies may moderate the re-action. If, in the cold stage, the patient is stupid, give *Belladonna;* after *Carbo veg.*, and for the cold perspiration, give *Carbo animalis.* At the recurrence of the fever upon the surface, give *Arsenicum* and *Bryonia.* If the patient has much heat in the head, and is delirious, give *Belladonna;* and, until the coating upon the tongue begins to disappear, do not thrust any food other than light gruel upon the patient, but as soon as the natural secretion of saliva appears upon the tongue, give beef-tea, or good mutton-soup, a little wine, and other nutritious stimulants; and, as the appetite returns, increase the strength of the diet. The same process of rubbing must be employed as in the Spotted Fever. If the urine is turbid, give *Nux vom.* If the feet swell during the convalescence, give *Arsenicum*, *Apis mel.*, or *Hellebore.*

Putrid Fever.

This fever, as its name implies, emits an unpleasant or fetid odor. It comes on much like those just described, only the breath appears to be tainted with something of a putrid character, and very often there are putrid discharges from the bowels. The urine has a putrid odor; and, when there is any perspiration upon the surface, it has the same smell. The disease comes on unobserved, and is attended with lassitude and inappetency. There is seldom any noticeable cold stage, and yet there is very little if any heat upon the surface. The tongue becomes coated with a dark-brown coating, and sordes collects upon the teeth in large quantities. The pulse is feeble and quick; the skin, for the most part, is dry and of low vitality. There is often more or less pain in the bowels, and a distension of the abdomen. The urine is thick and high colored, and of an offensive odor. The patient rejects all kinds of food and drink, except water; and this uniformly has to him a disagreeable taste. His nose is dry and sore, and his lips become dry and cracked; and sometimes a black or dark-colored saliva runs out of the corners of his mouth, which discolors them, and gives to his pale and sunken countenance a distressing appearance. The progress of this fever is slow and low, and often terminates in ulceration of the bowels. There is from the first a labored respiration and a putrid breath. For the commencing stage, give *Arnica;* if this fails to relieve the symptoms in twenty-four hours, give *Baptisia;* when the mouth becomes dry and the lips cracked, and the sordes collects upon the teeth, give *Nitric acid*, and follow with *Arsenicum;* when the patient complains of pain in the bowels, and there are putrescent discharges from them, give *Phosphorus;* if there is involuntary and painless diarrhœa, give *Phosphoric acid;* in case of great pros-

tration, give *Arsenicum*, followed in twelve hours, if no relief, by *Muriatic acid*. Putrid fevers are often fatal, and especially where a putrid diarrhœa is kept up by the fever. For distension of the abdomen, give *Nux;* for the thick and offensive urine, *Sulphur*, *Carbo veg.*, or *Arsenicum;* should the putrid stage pass off, leaving the patient prostrate, give *China*, wine, egg-nog, and even a little brandy, to keep up the vitality of the system. The sooner any one recovering from this fever can take light, solid aliments, the better.

SPECIFIC INDICATIONS FOR REMEDIES IN FEVERS.

In giving specific indications for the selection of remedies in Fevers, a large ground is covered, inasmuch as nearly all the diseases to which flesh is heir are attended by some specifically characterized fever, which calls for the proper remedy. It is therefore deemed important to state, in connection with the names of the important remedies, the particular characteristic symptoms that they represent.

Aconite is indicated for violent heat and chill, heat about the head and face; and red cheeks, palpitation of the heart, pleuritic stitches, anguish, sadness or ill-humor, despondency, and dread of death, bodily restlessness.

Antimonium is indicated when there is little thirst, yellow coating upon the tongue, bitter taste in the mouth, eructations, nausea, loathing, vomiting, and other gastric derangements; constipation or diarrhœa.

Arnica is indicated when there is thirst before the chill, and when the chill comes on in the evening after considerable aching of the bones; and also when there is constant desire to change one's position during the fever; for apathy, and pains in the stomach; for want of appetite, and aversion to meat when the fever has gone off. It is particularly indicated when there is weariness, listlessness, yellow color of the skin, and bitter taste, and following a blow or concussion.

Arsenicum album is called for when the chill and heat set in simultaneously, or when they rapidly alternate with each other, or when there is internal chilliness and external heat, and *vice versa;* also for burning heat, as if boiling water was flowing through the veins; no sweat until the commencement of sleep, oppression of the chest, anguish and uneasiness, pressure in the head, vertigo, pains in the liver and spleen, great debility, burning pain in the stomach, and disposition to vomit, great uneasiness and anguish in the region of the heart, violent pains and lameness of the extremities, and tendency to dropsy.

Belladonna, when the fever comes on with violent headache with stupefaction, marked chilliness and slight heat or the opposite; redness of the face, with heat and throbbing of the temporal arteries and carotids; entire absence of thirst or the reverse; and also when the patient is irritable and in a whining mood.

Bryonia, for coldness, chill with red cheeks, heat about the head, and yawning; or when the heat prevails with subsequent chilliness, heat of the chest with slight pains indicating pleurisy; or when there is a coated tongue, or headache and vertigo during the heat, nausea and faintness on sitting up.

Calcarea carbonica, for heat in the face, then chills; or with cold hands, heaviness of the head and limbs, pains in the small of the back, and restlessness; cold, sour-smelling sweat on the head.

Capsicum, when there is thirst during the chill and fever, and much mucus in the mouth, throat, and stomach; also when there is diarrhœa with slimy and burning evacuations; and when the patient is irritable, anxious, and oppressed during the chill, and when the chill begins in the back.

Carbo veg., when the chill occurs in the evening or at night; thirst during the chill only, which is followed with fever and copious sweat and chilliness; afterwards rheumatic pains in the teeth and limbs before or during the fever; and when there is vertigo, nausea, and red face during the heat.

Chamomilla, when there is pressure in the pit of the stomach, hot sweat on the forehead, despair, tossing about or bilious vomiting, diarrhœa and colic, — the thirst, heat, and sweat prevailing, frequent urination.

China is indicated when there is nausea, canine hunger, headache, anguish, palpitation of the heart, or other ailment previous to the paroxysm; when there is thirst generally before or after the chill and heat, or during the sweat; when there is no thirst, but tendency of blood to the head, headache, red face, uneasy sleep, and yellow complexion. China is also indicated when there is drowsiness, pains in the liver and spleen, bilious or dropsical symptoms, or enlargement of the liver and spleen.

Cina, for vomiting and canine hunger, both before and after the paroxysm of fever; the face is pale during the fever, and a tendency to emaciation exists, and dilated pupils.

Ferrum is indicated when the fever comes on with chill and thirst, headache, and tendency to congestion of various organs; swelling of the external veins, swelling of the face, especially around the eyes; great debility, vomiting of the food when partially digested, and laborious breathing.

Ignatia, when there is thirst only during the chill, and when this is moderated by external heat, or when there is external heat with partial internal shuddering; nausea and vomiting, pale color of the skin, and pains in the back during the chill; and also when there is *no thirst*, with headache, vertigo, and delirium, and particularly when there is paleness of the face, or else alternately pale and red, or only one cheek red during the heat; great languor, deep sleep, with snoring; after or during the fever, eruption on the lips and in the corners of the mouth. This remedy is also indicated for the fever attending Nettle Rash and other eruptions of the skin.

Ipecacuanha is indicated for a fever of much chilliness and little heat, or *vice versa*, and when the chill is increased by external heat, or when

there is little or no thirst during the chill, and great thirst during the heat; and also when there is nausea and vomiting, and other gastric symptoms, previous to, or during and between, the paroxysms of fever; and when there is a coated tongue and an oppression of the chest.

Lachesis is particularly indicated when chills occur after a meal in the latter part of the day, with violent pains in the limbs, and pleuritic stitches, oppression of the chest, and convulsive motions; and when there is violent headache during the heat; delirium, burning thirst, red face, restlessness, internal shudderings during the heat, livid complexion, debility, prostration between the paroxysms, heat especially at night, sweat after the heat, and when the fever is easily excited by eating lemons or other sour things

Mercurius is indicated when heat and sweat appear together, and when there is violent thirst, pains in the right side, acid stomach, and regurgitation of sour or bilious matter from the stomach; and when there are pains in the bones, and an aching of the limbs.

Nux Vomica is suitable for a fever that comes on with great debility, then chill and heat; constant desire to be covered, even during the heat and sweat; and when, during the chill, the skin, hands, feet, and face are blue; and when there are pains in the chest and abdomen, back, and particularly in the small of the back, or drawing in the limbs; and when there is headache, buzzing in the ears, distress in the chest, heat about the face, red cheeks and thirst during the chill and heat; and also when there are gastric or bilious symptoms, vertigo, anguish, and constipation.

Opium is called for when there is sleep during the heat, and even during the chill, with snoring respiration with the mouth open; convulsive twitchings, warm sweat, suppression of the secretions. This remedy is suitable for old people and children.

Pulsatilla is wanted when there is no thirst during the fever, or thirst only during the heat, and when there is an aggravation in the afternoon or evening, with headache, anguish, and oppression during the entire period of the fever; and when there is a red and bloated face, sweat in the face, and shuddering as soon as the patient recovers himself; and also when there are gastric or bilious symptoms, bitter taste in the mouth, bilious, slimy, or sour vomitings, or diarrhœa, alternating with constipation, oppression of the chest, moist cough, or headache. *Pulsatilla* is frequently suitable after *Lachesis*, or when the fever comes on again after overloading the stomach in any way. Often beneficial after the abuse of *Quinine*.

Rhus tox is suitable for an evening or night fever, when the chilliness and heat both make their appearance simultaneously, and a copious sweat comes on after midnight or towards morning; and when, during the chill, there are pains in the limbs, headache, vertigo, or toothache; or when, between the paroxysms, there are convulsive twitchings of the limbs, nettle-rash, colic, diarrhœa, and gastric derangement; or when there is jaundice, sleeplessness, and tossing about, thirst at night, palpitation of the heart, with anguish and pressure in the pit of the stomach.

Veratrum, when there are external chill and cold sweat, or internal heat, with dark-red urine, delirium, and flushed face; or when there is

chill, with nausea, vertigo, pains in the small of the back and back; or when there is chill alternating with heat, constipation, or vomiting with diarrhœa; and when there is thirst during the chill and heat.

With the above remedies, or any of them, the following remedies may be employed; as *Cantharis*, when the urinary passages are involved; or *Cocculus*, when the patient is nervous and threatened with spasms, cardialgia, and constipation. When the fever for which any of the remedies are indicated is in sensitive persons, made restless by great nervousness, give *Coffea;* and especially when there is sweat with thirst, soft stools, or diarrhœa. Give *Drosera*, when there is violent chilliness with cold face, icy cold hands and feet, nausea and bilious vomiting, headache and spasmodic cough during the heat, and gastric symptoms between the paroxysms. Give *Hepar*, when the patient has coryza, cough, or distress in the chest, or chill and thirst, preceded by bitter taste, followed by heat and sleep. Give *Hyoscyamus*, when the fever is attended by cough at night, or even epileptic attacks. *Mercurius*, sour and fetid sweat, with palpitation of the heart. *Sulphur*, when the fever is from suppressed Itch, with chills every evening, heat and sweat towards morning, fever with palpitation of the heart, and violent thirst even before the chill.

In case of any fever occurring with symptoms described as being particular indications for the employment of any one remedy, always select that remedy; and, in all probability, but few doses will be required to effect a cure, provided the patient is placed in the most favorable condition for recovery: for this is as essential as the employment of remedies.

In many instances, only a single symptom may present itself, while in other respects the patient may be well. A brief consideration of some of these may be useful; as, —

Aversion to Food. — *Anorexia.*

When this exists as a mere symptom, or dislike for food, give *Tart. emetic.* If after gastric affections, give *China.* For aversion to food, accompanied with hunger, give *Bryonia* or *Rhus tox.*, or else *Ignatia* or *Nux vomica.* For complete loathing of food, give *Ipecac.* or *Pulsatilla.*

Loss of Smell. — *Anosmia.*

This symptom may show itself independently, and consists in a mere insusceptibility of the olfactory nerves, which may be quickened by one or two doses of *Belladonna*, *Calcarea*, or *Sanguinaria.* If from paralysis of the olfactory nerves, give *Nux vomica* or *Sepia.* If from catarrh, give *Calcarea*, *Hepar*, *Silicea*, or *Sulphur.*

Loss of Taste. — *Agustia.*

For the absence of this sense, independently of other affections, give *Natrum mur.* and *Silicea.* For loss of taste from purely nervous causes, such as paralysis of the gustatory nerves, give *Hyoscyamus*, *Nux vom.*, or

Sepia. For the same attended with catarrh, coryza, and other effects of cold, give *Pulsatilla* or *Sulphur*, or else *Hepar* or *Sepia.* Give the usual dose, and repeat twice a day as long as is necessary.

For alterations of taste, viewed as mere symptoms, the following remedies may be employed: *Aconite*, *Arsenicum*, *Belladonna*, *Bryonia*, *Mercurius*, *Rhus*, *Pulsatilla*, &c. For bitter taste, give *Aconite*, *Bryonia*, *Mercurius*, or *Nux vomica.* For the taste of blood, give *Ipecac.* or *Sulphur.* For the taste of pus, *Pulsatilla.* For clayey taste, *China*, *Hepar*, *Pulsatilla.* For flat, watery taste, or insipid, give *Bryonia* or *China.* For the taste of bad eggs, cheese, &c., give *Arnica*, *Rhus*, or *Sulphur.* For greasy taste, *Causticum.* For metallic taste, give *Calc.*, *Lachesis*, *Nux vomica*, or *Rhus.* For clammy or slimy taste, *Arnica* or *Belladonna.* For rancid taste, give *Bryonia* or *Ipecac.* For salt taste, *Arsenicum*, *Carbo veg.*, or *Sulphur.* For sour taste, give *Calc.*, *China*, *Nux vomica*, or *Sulphur.* For other forms of illusory or bad taste in general, give *Nux*, *Pulsatilla*, or *Sepia.* For sweetish taste, give *Belladonna*, *Bryonia*, *China*, *Merc.*, or *Pulsatilla.* When food tastes bitter, give *Colocynth.* For bitter taste after eating and drinking, *Bryonia*, *China*, *Pulsatilla.* When food has a salty taste, give *Carbo veg.* When it tastes sour, give *Calc.* or *China.* When there is a sour taste after eating, *Nux vom.* or *Pulsatilla.* Sour taste after drinking, *Sulphur.* If after drinking milk, *Nux vomica.* When bread tastes sweet, give *Mercurius.* When those who use tobacco imagine that it has an acid taste, *Staphysagria.* When there is an illusory taste of sweetness of beer, *Pulsatilla.* For nauseous taste, *Ipecac.* A single dose of the remedy indicated for illusions of taste will generally correct the disorder. Nearly all these departures from the normal condition of the sense may be indicative of some peculiar derangement of the animal or organic functions, that the chosen remedy may avert or correct. The value of these isolated symptoms in pointing to remedies that may be used as timely preventives of more serious derangements can hardly be appreciated. As, for instance, a bitter taste may forebode a serious biliary derangement, that *Aconite* may prevent. And so with all the other varieties of illusory taste: what might follow, if neglected, no one can tell. It is better to prevent than to cure a malady; and when the sentinels of taste and smell stand ready to guard against the approach of diseases, it is always best to give heed to their admonitions.

POISONS. AND THEIR ANTIDOTES.

SUBSTANCES which derange the vital functions, and produce death by an action not mechanical, are denominated poisons; and distinguished writers have noted three classes of these substances, which may be noted as follows: —

1st. *Irritant Poisons*, or those which produce irritation or inflammation, as mineral acids, *Arsenic*, *Copper*, *&c.*

2d. *Narcotic Poisons*, or those which produce stupor or delirium, and other affections of the brain and nervous system, as *Opium*, *Prussic acid*, *&c.*

3d. *Narcotic-acrid Poisons*, or those which sometimes produce irritation, and sometimes narcotism; sometimes both together. These are all derived from the vegetable kingdom; as *Strychnia*, *Nux vomica*, *&c.*

As most everybody is obliged to be so situated, that, through mistake or accident, poison of one or another of these classes may be taken into the system, it seems desirable to be well instructed in the use of antidotes, and the treatment of the supervening irritation or inflammation.

If, through mistake or accident, either *sulphuric*, *nitric*, or *hydrochloric acid* is taken into the stomach in poisonous doses, give *Chalk* or *Magnesia;* or, if this is not at hand, beat down the plaster from the wall, and make into a thin paste with water, and give this. Soap-suds is another antidote. Drink freely of any mild fluid, or milk, both before and after the antidote is administered. For the supervening inflammation, such remedies may be employed as in Gastritis from any other cause: *Aconite*, in case of much fever; *Bryonia*, if glairy vomitings; *Nux vomica*, if there is sense of weight, &c.

In case of *Oxalic acid* being taken into the stomach by mistake, as this may occur from its resemblance to *Epsom salts*, it will be necessary to excite vomiting at once by tickling the throat with a feather, or by an emetic; and, after, to administer *Chalk* or *Magnesia* in large doses suspended in water. These not being at hand, break off the plaster, and make a paste as before. *Alkalies* will not answer, as they would only form neutral salts. For the after-symptoms, give *Aconite* dissolved in water, — a tablespoonful after every paroxysm of vomiting, until they cease; and give the victim at the same time, freely, mucilaginous drinks, and also *Coffea* and *Opium* as antidotes.

For poisoning with Arsenic, the first thing necessary is to thoroughly evacuate the stomach; and, for this purpose, give an emetic, and then follow with *iron-rust*, or the *Sesqui-oxid of Iron*, largely diffused in water; and let the patient drink freely of mucilaginous, farinaceous, or albuminous drinks, and milk. The subsequent inflammation must be treated with *Aconite*, — a dose every two hours until the nausea entirely disappears; *Nux vomica*, also, for the inflammation and soreness of the gastric region; *Bryonia*, if the slightest motion produces pain; and *Pulsatilla* or *Nux vom.*, if the most delicate kinds of food aggravate the suffering.

For Poisoning with Mercury, and Corrosive sublimate. — This is the usual form of *Mercury* employed for committing suicide; and, as it is used for *bed-bug* poison, it is liable to be taken through carelessness or mistake. It is therefore requisite to point out some antidote the nearest at hand. Give *whites of eggs* in abundance, or *Gluten* if eggs cannot be had; or else milk. The most usual form of the supervening irritation is Salivation or Mercurial Fever. For these, give *Nitric acid*, *Hepar sulphur*, and obtain for the patient fresh air and a nourishing diet as soon as possible.

For Poisoning with Copper.—The blue vitriol, or *Sulphate of Copper*, and *Verdigris*, are the forms in which this poison is most common; and, when taken into the system, the most ready antidote is the *white of eggs*. Great care should be taken to exclude vinegar, for this acid would add virulence to the poison. To allay or cure the remaining irritation, give *Sulphur* twice a day.

Poisoning with Antimony, or Tart. emetic, is liable to occur, as this substance is sometimes used in medicine as an *emetic*. When given to excess, it produces vomiting, attended with burning pain at the pit of the stomach, followed by purging and colic, stricture of the throat, and cramps. As an antidote, give large draughts of warm water, and tickle the throat with a feather to induce vomiting; also the decoction of any bark containing tannin, as oak, hemlock, or cherry-tree bark. For the subsequent ailments, give *Sulphur*, *China*, *Nux vomica*, or *Opium*.

For poisoning with Zinc, or white vitriol, which is denoted by violent vomiting, sunken eyes, and pale face, cold extremities, and fluttering pulse, give the infusion of any of the substances containing *tannin*, and feed the patient with cream, butter, and chalk quite freely.

For poisoning with Lead. — Red lead and white lead, as well as sugar of lead, are liable to be taken by mistake; and their poisonous effects are denoted by obstinate colic, spasms of the muscles, and sometimes apoplexy. As an antidote, give water of ammonia, or hartshorn, or pearlash-water, or any of the earthy sulphates, as lime, etc. For Lead Paralysis, give *Sulphur*, and afterwards *Nux vomica*. For colic, *Opium*.

For poisoning with Cantharides, which is denoted by intense burning in the pit of the stomach, and pain in the lower abdomen, feeble voice, laborious breathing, strangury, and tenesmus of the bladder, headache, and delirium. To remove the Cantharis from the stomach, excite vomiting in the quickest and most speedy way, — by tickling the throat with a feather, or drinking a strong mustard-tea, or by taking snuff upon the tongue. Give *Aconite* to allay the fever; give *Nux vomica* and *Pulsatilla* to allay the irritability of the stomach, and *Arnica* to relieve the

tenesmus, or *straining;* or else spirits of *Camphor*. This is believed to be the best antidote.

For poisoning with Morphine, which is denoted by giddiness and stupor, the person becomes motionless, and insensible to external impressions, breathes slowly, and lies quite still, with the eyes shut and the pupils contracted, the whole expression of the countenance being that of perfect repose. As the poison advances, the features become ghastly, the pulse feeble and imperceptible, the muscles excessively relaxed; and, unless assistance is speedily called, death soon ensues. The first thing necessary is to remove the poison from the stomach, which is by inducing vomiting. If soon after taking the morphine, give mustard-water freely, or inject in the stomach some *sulphate of zinc*, if the patient is too insensible to take it otherwise. After vomiting is induced, arouse the victim, make him walk up and down the room for hours, until the inclination to sleep is superseded by nausea, headache, and vomiting, and then give him *strong coffee;* and afterwards, to remove the entailed symptoms, give *Nux vomica*.

For poisoning with Prussic Acid, when not fatal, resort to cold *shower-bath*, and inhalation of diluted *water-of-ammonia vapor;* give, also, solution of *carbonate of potass*.

For poisoning with Charcoal Gas, as from the fumes of burning charcoal in a close room, resort to cold affusion, and give *Aconite*, in drop doses, in a spoonful of water. The same treatment may be resorted to in case of poisoning with any of the poisonous gases, as *sulphureted hydrogen* and *carbonic acid*.

Poisoning by *Strychnia*, or *Nux vomica*, is denoted by convulsions, with much anxiety and agitation during the fits. The whole body is stiffened or straightened; the legs pushed out and forced wide apart; no pulse or breathing can be perceived; the face and hands livid, and the muscles violently convulsed. *Nux vomica*, or *Strychnia*, in poisonous doses, generally proves fatal, in spite of treatment. If emetics are given, and the stomach is made to disgorge its contents sufficiently early, and the patient is not attacked with convulsions in two hours, he will generally be safe.

In treating any case of poisoning, two things are required: 1st, removal of the exciting cause; 2d, treatment of the effects that remain. The removal of the poison should be done, if possible, with little violence, and by the simplest and most innocent method, either with the finger, or in case the poison has been a long time swallowed, excite *vomiting* or *stool* by the simplest means. Copious administration of tepid water, irritating the fauces by means of a feather or something similar, or by salt, mustard, and snuff, or injections of tobacco-smoke; and neutralize the poisons by means of *albumen*, *vinegar*, *lemon-juice*, *coffee*, *camphor*, *milk*, *oil*, *soap*, *mucilaginous drinks*, *tea*, *wine*, *sugar*, or, as it has been seen, with *ammoniacal gas*, *iron-rust*, *charcoal*, *kitchen salt*, *Epsom salt*, *potash*, and *starch*.

It is well to be familiar with these antidotes of poisons, and to bear in mind the particular indications, or poisonous substances that call for them, as follows: —

Albumen, or *whites of eggs*, antidotes such metallic substances as quicksilver, corrosive sublimate, verdigris, tin, lead, and *Sulphuric acid*, when

the victim complains of violent pains in the stomach, with tenesmus, or diarrhœa, and pains at the anus.

Vinegar antidotes alkaline poisons, and obviates the ill effects of aconite, opium, poisonous mushrooms, belladonna, &c.

Coffee. — Strong black coffee, made of the berry lightly roasted, and drank hot, is an antidote to opium, nux vomica, belladonna, narcotica, mushrooms, poisonous sumac, bitter almonds, and all those substances containing prussic acid. It must be borne in mind, however, that the cause must be removed, if possible, first.

Camphor antidotes the ill effects of poisonous insects, and especially cantharis, whether administered internally or externally. *Camphor* also antidotes the toxical effects of phosphorus, spigelia, and santonin. It is also useful for the after-effects of acids, salts, metals, &c., after the poisonous substance itself has been removed from the stomach by means of vomiting, &c.

Milk is frequently alluded to as an antidote for poisons; but it has no real merit. Mucilaginous substances are better, and much to be preferred.

Olive Oil ranks with milk, and is much less useful than is believed. It is useless in metallic poisons, and even hurtful in poisoning with arsenic. It is of some service, however, in case of poisoning either with *Nitric*, *Sulphuric*, or *Phosphoric acid.* Olive oil and vinegar, administered in alternation, has proved serviceable in cases of poisoning with alkalies.

Soap. — *Castile soap*, dissolved in four times its bulk of hot water, and drank, will antidote many cases of poisoning with *Corrosive sublimate* and also with arsenic, or with any of the numerous forms of lead. *Soap-suds* is likewise a valuable antidote for poisoning with *Sulphuric* and *Nitric acid.* Soap is hurtful in cases of poisoning with alkalies.

Sugar, or *sugar-water*, is quite as good as any of the antidotes, and much to be preferred in cases of poisoning with paint, verdigris, copper, sulphate of copper, alum, &c. In cases of corrosive sublimate, in solution, being taken into the stomach by mistake, as it has been, sugar-water may be given before the white of an egg. Sugar is also an excellent antidote in cases of poisoning with *arsenic.* The other antidotes are, —

Ammoniacal gas, or the volatile odor of spirits of hartshorn, for poisoning with alcohol, bitter almonds, or prussic acid.

Iron-rust, or the sesqui-oxide of iron, for poisoning with arsenic, *freshly prepared.*

Epsom salt, for the various alkaline poisons.

Charcoal, for poisoning with putrid fish, meat, or mushrooms, or mussels.

Kitchen salt, for poisoning with nitrate of silver, and poisonous wounds.

Magnesia, for poisoning with any of the mineral acids.

Potash and *Sweet Almond oil* are also good antidotes for acids.

Starch, in solution, is the best antidote for poisoning with iodine.

Strong tea is a good antidote for poisoning with honey; and so is

Wine, for noxious vapors and poisonous mushrooms.

And here it may be repeated, that the first thing we have to do, in treating cases of poisoning, is to remove the poison by vomiting, and then to administer the suitable antidotes. In case we should not be able to ascertain what kind of poison has been swallowed, we should first admin-

ister the *white of egg;* and in case there should be stupor, give coffee, quite strong, made of the lightly-roasted kernel. But if we should know the poison to be mineral or metallic, the first resort may be to white of egg, sugar-water, soap-water, or soap-suds, and for the remaining effects give *Sulphur*, which has been ascertained to be a real antidote to the effects of metallic poisons. If it should be known that acids or corrosive substances have been taken, give castile soap mixed with four times its bulk in warm water, or magnesia dissolved in water, or powdered chalk stirred up in water, or a solution of saleratus, pearlash, or super-carbonate of soda, in spoonful doses, after each paroxysm of vomiting, as long as it continues; and afterwards give mucilaginous drinks, and, alternately, coffee and opium, in the form of homœopathic remedies; and for the remaining ailments, give *Pulsatilla*. After the antidotes have been administered, give *Pulsatilla* for sulphuric acid, *Bryonia* for muriatic acid, and *Aconite* for other acids, and especially for crab-apple vinegar. In case it should be known that alkaline substances have been swallowed in poisonous quantities, vinegar and water may be given in large quantities, and also lemon-juice or cranberry-sauce, without sugar, or *sour milk;* and for the secondary effects of poisoning with potash, give *Coffea* or *Carbo veg.* If the poisoning is known to be the effects of spirits of hartshorn, give *Hepar sulph.;* if it should be known the patient had been inhaling *noxious vapors*, bathe the patient freely with vinegar and water, and let him inhale the vapor of a solution of hydrochloric acid; and, after a return to full consciousness, give a strong decoction of partially-charred coffee, or a few doses of *Opium* or *Belladonna.*

The vapors of coal, when having a poisonous effect, may be antidoted by copious draughts of vinegar and water; and for poisoning by any substance not mentioned, first follow the rule of removing the poison from the stomach by vomiting, and, for the irritation or inflammation left behind, affiliate any homœopathic remedy that may meet the case. If there is much fever or arterial excitement, give *Aconite* every hour; if severe burning at the stomach, and thirst, give *Arsenicum* or *Mercurius;* if there is great soreness of the muscles, give *Arnica*, and let the patient be bathed with a lotion of the same; if it is known that any of the *animal poisons* have been taken into the stomach, give a teaspoonful of powdered charcoal in half a tumbler of water at a dose, and repeat after each vomiting until the stomach becomes quiet; and if a poison of this kind has come in contact with the eyes, give *Aconite;* and, finally, to guard against the infection of poisonous wounds, when touched with the fingers or hand, let them be held in strong heat, as strong as it can be borne, for ten or fifteen minutes, and afterwards wash them with soap.

REVISED TREATMENT.

Pleurisy. — *Pleuritis.*

(*Treatment continued from page* 240.)

Nothing gives so much and such immediate relief to pain as a subcutaneous injection of morphine. Aconite also is a valuable sedative in this stage. It may be given in half or whole-drop doses every fifteen minutes for two hours; then afterwards a drop, to be repeated hourly till some impression is made upon the heart's action. Smaller doses are to be given if the pulse becomes feeble.

In the second stage, if the acute symptoms have yielded to treatment as they usually do, the object of treatment is to promote the absorption of the fluid. This is done by the judicious use of saline cathartics and by duretics, for the bowels and the kidneys are the natural pumps of the system.

The application of counter-irritants is also of use for this purpose, such as the tincture of iodine, and small blisters, which are to be allowed to remain on till vesication, and then the blister is to be dried up and a new one is then applied. If at any time during this stage the effusion is rapid and excessive, so as to endanger life, it is to be drawn off by puncturing the chest between the fifth and sixth ribs on the side with a small trocar, and the fluid is to be drawn off by suction.

Convalescence commences when the liquid begins to be absorbed; and active medication should then cease, and that course should be pursued which will lead to the restoration of the general health. This is done by tonics, a nutritious diet, and other hygienic means. If the effusion ceases to be absorbed or the process takes place very slowly, then that state of things exists which is called chronic pleurisy. Then the main objects of treatment are to effect the removal of the fluid, and to develop and sustain the powers of the system. Under these circumstances, it is better to discontinue remedies which act upon the bowels and the kidneys, at least for a time, and try general treatment. This consists of tonics, stimulants, and gentle exercise in the open air, and with this the surgical removal of the fluids from the cavity of the chest.

The operation is now so much improved, and is so safe and simple and attended with so little pain, that it has become an every-day practice, and an operation which was only resorted to as an extreme measure to save life, is now admissible whenever the pleural cavity remains filled with liquid, after only a brief trial of the remedies designed to promote absorption.

Fracture of the Bone. — *Treatment.*

(*Continued from page* 454.)

In the treatment of fractures of the shafts of the bones of the lower extremities, three indications should be fulfilled: First, coaptation and fixation of the fragments; second, moderate extension; third, gentle compression and support. Provided these requirements are carried out, it matters little what apparatus may be employed; but that which can be applied with the least disturbance of the fractured bone, and is most comfortable to the feeling of the patient, should be preferred.

The best mode of extension and counter-extension now in use is by raising the foot of the bedstead about eight inches, by a block of wood placed under each fore leg. This makes an inclined plane, and the body consequently tends to incline towards the head of the bed; this is the counter-extension.

Then extension is made as follows: A strong piece of adhesive plaster, about two and one half inches wide and about three feet long, is applied to the sides of the leg, extending from a little below the knee, leaving a loop under the foot four or five inches long. This is secured firmly in place by a bandage to the whole length of the leg. A piece of cord is fastened to the loop and passed over a pulley, which is fixed to the foot-board of the bed. To the other end of this cord is attached a weight. This need not exceed ten or twelve pounds.

In this way we get our counter-extension and extension: the body is drawing one way and the weight is pulling the other all the time.

This is a simple and comfortable way of treating fractures of the shafts of the bones of the lower extremities which require extension. It may be applied to the different fractures of the neck of the thigh bone, to fractures of the shaft, and also to fractures in the shafts of the bones of the leg.

It is the best and most effectual way of preventing undue shortening that we have in use, and what is of as great importance to the patient, a most comfortable way of keeping the painful limb in the proper shape. (See page 454.)

Fractures. — *Counter-extension.*

Modern surgery has developed two simple mechanical means of making extension and counter-extension for the purpose of overcoming muscular spasm, which rarely fail. One is by the use of elastic rubber bands, and the other by the attachment to the limb of a cord running over a pulley at the foot of the bed and sustaining a suitable weight. The method of employing these will be given in detail in connection with special fractures. (See page 444.)

Fractures. — *Coaptation.*

A great point is to have the splints accurately adapted in each case, and the ability to affect this is an important element of success in this branch of surgery. Wood may be generally cut into suitable shape, but it is perhaps easier to use moulded splints of leather, felt, gutta-percha, or shellac cloth. The starched or plaster bandage or gummed paper may be effectively used; and with a proper pair of shears, sheets of tin or zinc may be cut into splints, which will answer admirably. Woven iron wire splints are highly recommended. (See page 445.)

Bleeding from Wounds.

One of the best methods now in use of arresting hemorrhage in cases of accidental injuries of the large arteries of the extremities, is by surrounding the limb above with two turns of a piece of rubber tubing, about three fourths of an inch in diameter, and tying it tight. This safely and effectually controls all bleeding.

Advantage is taken of this elastic property of rubber in controlling hemorrhage, in performing what is called bloodless operations of surgery. It is called Esmarch's method, from the name of the originator. It may be resorted to in all operations on the extremities, whether of amputations, the removal of tumors, or in the minor operations of removing needles, and whenever the bleeding interferes with the performance of the operation.

It is applied as follows: The limb should first be tightly bandaged with an elastic rubber bandage about three inches wide, from below upwards, and then surrounded at the highest point with a band or tube of rubber in the place of a tourniquet. The bandage is then to be removed, when the operation may be performed in temporarily bloodless tissues.

An amputation of the thigh may be thus performed without loss of any blood of consequence. (See page 493.)

Antiseptic Dressings.

Antiseptics have lately attracted a great deal of notice in the treatment of inflammation, especially resulting from wounds.

The article most used at the present time for this purpose is carbolic acid. Lister is its chief advocate, and under his authority it has established a position which deserves attention.

It is based upon the germ theory of disease, which is founded upon the observations of Pasteur. The theory supposes that animal decomposition is due, not to the chemical action of oxygen, or any other gas, but to the presence of organic germs floating in the atmos-

phere. Carbolic acid is used on account of its known destructive effects upon low forms of organic life.

These low forms of vegetable organisms, which float in the air in great abundance as constituents of the dust, are called by naturalists bacteria, of which there are many varieties. Whenever they find entrance into the body, there putrefaction is produced.

These vegetable parasites are capable of a wonderful power of multiplying their species, — a single germ producing in a few hours many thousands. Once admitted into the body, they find their way everywhere, — into the muscles, into the blood, into the different organs of the body, — and they spread destructive fermentation and putrefaction wherever they go.

In accidental wounds, it is first necessary to kill any septic organisms which may have been introduced from the air or from contact with foreign bodies. We do this by thoroughly bathing the surfaces with a solution of carbolic acid, of the strength of one part of the acid to twenty of water.

When the wounds are made by the surgeon, the germs are destroyed by means of a spray imbued with the acid. This spray is produced by an atomizer, of which there are many kinds, and is thrown continually on to the surface of the wound, until the completion of the operation, including the ligaturing of the vessels and the final stitching together of its edges.

Lister also recommends the use of carbolized catgut for ligatures, being of an animal substance and finally absorbed.

When the operation is fully completed, the antiseptic dressings are applied. Besides these antiseptic precautions, in cases of large and deep wounds a drainage tube is introduced to allow for the escape of the serum.

The antiseptic dressings consist of — first, the protector; second, the carbolized gauze; third, the mackintosh; and fourth, another layer of the gauze, and a bandage of the same to keep the whole in place. For the purpose of protecting the cicatrizing parts from the irritating effects of the gauze, a layer of oil silk coated on both sides with copal varnish, and afterwards brushed over with dextrine, to enable it to become uniformly moistened when dipped into a watery solution of the acid, is applied directly over the wound, the ends of the drainage tube protruding about an inch from each extremity of the incision. The wound is then covered with a layer of antiseptic gauze dipped into a solution of one to forty of the acid. There are then superimposed six other layers of dry gauze; then the mackintosh or a piece of rubber cloth; then an eighth layer of gauze large enough to cover in all the remainder, and finally a bandage of the same.

When the dressings are renewed, it is to be done under the spray, great care being taken not to admit any non-carbolized air.

The dressings are not to be changed until the discharge has begun to soak through and appear below the edge of the rubber cloth.

The antiseptic gauze is made by impregnating cotton cloth of open texture with a mixture of carbolic acid one part, resin five parts, paraffine seven parts. The resin acts as a vehicle for the acid, while the paraffine is added to prevent inconvenient adhesiveness. (See page 440.)

Poisoning Accidents.

Poisons may be classified under two heads; viz., mineral and vegetable.

In the treatment, three objects are to be kept in view: first, to get rid of the poison; second, to stop its action; and third, to avert its tendency to death.

The first indication is accomplished by the administration of emetics to cause vomiting, or by the use of a stomach pump. The simplest way to provoke vomiting is to give large draughts of lukewarm water, and to thrust a finger down the throat.

A teaspoonful or two of mustard in warm water is oftentimes an effectual emetic. Some of the emetics are ipecacuanha, tartar emetic, sulphate of zinc, and sulphate of copper.

Sulphate of zinc in twenty-grain doses is about the best. The second indication is to use an antidote. The third indication is fulfilled by palliating the symptoms, and neutralizing the after effects on the constitution.

After copious vomiting, soothing liquids should be given, such as oil, milk, beaten-up raw eggs. These are useful when the poison has been of an irritating character.

If the patient be much depressed in body or mind, the hands and feet cold, the lips blue, the face pale, a cold perspiration on the forehead and about the mouth, some stimulant may be administered. Strong, hot tea is the best, because it is a chemical antidote to many poisons. Strong coffee is a good stimulant. Brandy and other spirits are sometimes necessary. Sometimes when the powers of life are much depressed, artificial heat also is necessary. (See page 496.)

Acute Rheumatism.

Since 1875 two new remedies for rheumatism have come into use; viz., salicylic acid and its salts, and salicin, the active principle of the willow bark.

When given at the commencement of an attack, it oftentimes arrests the course of the malady as effectually as quinine arrests the intermittent fever, or as opium and ipecacuanha arrest dysentery. It exerts such a beneficial influence that it is recognized by the profes-

sion as a specific. From ten to fifteen grains of salicylic acid or the salicylate of soda should be given every two hours until relief is obtained. This usually takes place in from twelve to thirty-six hours. In most cases the fever and swelling will abate within the above time. If not entirely arrested, the disease is very much shortened.

When the specific effect is produced on the system, it causes vertigo, headache, ringing in the ears. These symptoms indicate that the medicine should be given in smaller doses and with longer intervals. (See page 416.)

The Temperature of the Body.

THE use of the thermometer is an important addition to the means of making physical examination, and is one of the improvements in modern medicine.

It is intended to measure the heat of the body.

The best kind now in use is the self-registering.

The bulb of the instrument is to be placed in the warmest part of the body, and should be allowed to remain there for eight to ten minutes.

Some place it under the tongue; some in the axilla.

Sometimes it is necessary to introduce it into the rectum or vagina. In these parts the temperature is a degree higher than in other parts.

The normal temperature of the body is from 98° to 99° Fahrenheit, in the great majority of persons.

Exceptionally it may be half or a whole degree either above or below this range.

The normal fluctuations are inconsiderable in comparison with the variations of disease.

The natural variations in health are as follows: The temperature is at its minimum at five o'clock A. M.; the maximum is reached in the latter part of the afternoon, and then continues till five o'clock A. M.

By means of the thermometer we are able to determine all differences with precision.

The increase of heat in different febrile diseases rarely exceeds 110° Fahrenheit, and as a rule the amount of increase is a criterion of its severity.

An increase to 100° Fahrenheit or 101° is evidence of mildness of the disease.

If the thermometer indicates steadily 105° Fahrenheit, it is certain that the disease is severe.

A persisting temperature above 105° Fahrenheit denotes that there is great danger, and an increase to 108° to 110° Fahrenheit is usually a fatal sign.

The abnormal changes of temperature consist of more or less increase.

Diminution below the normal standard is comparatively rare; yet it sometimes occurs and is of some importance.

In the course of typhoid fever, a sudden decrease may indicate intestinal hemorrhage. Sometimes the temperature falls, without improvement in the other symptoms. This is an unfavorable symptom.

The value of thermometric changes depends in no small measure upon the symptoms with which they are associated.

Pyæmia.

This frightful affection has been called the bane of surgery. It is caused by a peculiar poison, resulting from the fermentation and disintegration of the tissues of a wound, which is taken into the system either by the veins or absorbents, and is usually accompanied by the formation of collections of pus in the various tissues and organs of the body. It follows very trifling as well as severe injuries, and it is a frequent *sequela* of surgical operations, oftentimes of a very slight character. The only tenable theory which can explain the different phenomena of this disease is, that the pyæmic condition is caused by the absorption of septic material, sometimes in a fluid, sometimes in a gaseous state, which unfits the blood for the processes of healthy nutrition, induces capillary stagnation and its consequences, low forms of inflammation in different parts of the body, as in the joints and serous cavities, and may finally produce those secondary deposits of pus, in any or all parts or organs of the body, called metastatic abcesses.

When an internal organ is involved, the result is generally fatal. When suppuration attacks the integuments or the extremities, there is a fair chance of recovery.

Thence the disease has been divided into two classes: the internal or acute, the external or chronic pyæmia. When pyæmia involves the internal organs, the course is usually rapid and fatal. When it attacks the external parts, it is slow in its course and may be recovered from.

Duration of the Disease. — Sometimes its course is so rapid that the patient may die in two or three days after the appearance of the symptoms. As a rule, however, bad cases terminate during the second week. Some go on for six or seven weeks. In cases which recover, the patient goes through a long illness and may be left permanently crippled by secondary affections of the joints. As a rule, the longer a patient lives the better the hopes of a successful ending.

Pyæmic symptoms generally make their appearance after the fourth day. The first symptom is a chill; this is repeated at irregular intervals, and is followed by profuse and exhausting sweats.

The hot stage which characterizes the malarial paroxysms of intermittent fever is usually absent or but slightly marked. During the

course of the attack, the temperature of the body, which is naturally 98½° Fahrenheit, may rise six or eight degrees, and in ordinary cases its fall is, as a rule, gradual. The greatest elevation of temperature corresponds with the period of rigor. During the sweating stage the temperature falls again. Should the fall be sudden, a general breakdown of the powers of the patient is indicated. The pulse rate varies, according to the violence of the attack, from ninety to one hundred and thirty. The respiration is usually rapid, from forty to fifty a minute, and in many cases a hay-like odor of the breath is present, which is considered pathognomonic of the disease. The countenance is flushed, the skin dusky, sallow, sometimes jaundiced and marked with sudamina.

The tongue is coated, and there is a complete loss of appetite, and often nausea and vomiting. The urine is frequently albuminous. When the brain is involved there will be sleeplessness, or delirium of a low, muttering kind; some unconsciousness, from which the patient can be aroused only to relapse.

Intense pain usually attends the secondary complications, though it is sometimes remarkable how slight the symptoms often are when severe local disease exists.

The wound becomes sanious, serous, and fetid; sometimes the secretions are arrested and the surface becomes dry and glazed; sometimes absolute sloughing occurs. Union, if progressing, will become disunion, and all reparative action ceases. As the disease progresses, the symptoms become profoundly typhoidal, and the patient may die comatose or from exhaustion.

The exciting causes of pyæmia are very obscure. It attacks the healthy as well as the feeble, those surrounded by perfect hygienic influences as well as those who are exposed to deleterious influences. It is found not only in hospitals but in private practice; but it is more prevalent in unhealthy places, in the overcrowded wards, and in those spots where ventilation and drainage is bad. It lurks among the poorly housed and poorly fed and clad, and wherever those influences exist which are depressing to the vital powers.

The general treatment in these cases is of paramount importance. It is the duty of the surgeon to see that the patient's room is well ventilated, and that it is frequently purified by cleansing and disinfectants.

The wound is to be kept clean and well drained.

The dressings should be changed as often as four times a day, and saturated with disinfectant lotions.

When sloughing exists the charcoal poultice should be applied, and every measure pursued which will insure the utmost cleanliness of the patient and his surroundings.

The curative treatment is to be conducted on the same principles which guide the surgeon in the management of all cases of a typhoidal character.

The bowels if constipated are to be opened by a gentle laxative, and the different secretory organs restored to a healthy action as far as possible.

The vital energies of the patient are to be maintained or stimulated, and everything that tends to lower them must be warded off.

Quinine is the most valuable remedy we have for the treatment of pyæmia. Some surgeons give it in large doses and speak highly of its effects. It is valuable in doses of four or five grains every three or four hours. It may be combined with iron advantageously in some cases. The best combination is with the citrate of iron. Four grains of each are to be given four or five times a day.

Stimulants are also of great importance to maintain the powers of life. In some cases it is necessary to employ them freely to keep up the waning strength.

The diet should be as nutritious as the patient's assimilative powers will bear. Milk and the animal broths are the best.

When the stomach rejects nourishment it must be given by the rectum, enema of beef tea and milk with brandy being administered every four hours.

When the nervous system is disturbed by pain and want of rest and sleep, some of the forms of opiates or anodynes are to be given, small doses frequently repeated being better than large.

Should diarrhœa exist it is to be kept under control. It should not be checked suddenly, as it appears to have an eliminative tendency in cases of blood poison.

Carbonate of ammonia in ten-grain doses five or six times a day is a valuable remedy when other tonics cannot be tolerated.

When secondary abscesses form, they should be opened and kept cleansed by some disinfectant fluid, such as carbolic acid or the solution of the chlorinate of soda, in their proper strength.

MARRIED LADIES' PERPETUAL CALENDAR.

THE utility of these tables, as serving for a faithful and confidential friend in matters of urgent interest, cannot fail of being perceived. The young and newly-married might be spared an unpleasant amount of embarrassment by consulting the Calendar as to the time of confinement, which, in reckoning the full period of gestation 280 days from conception, may be very nearly approximated; or, in the event of the time of conception being uncertain, from the period of quickening, which she can usually note, she may reckon 140 days. It will be perceived that the Calendar has three columns of figures, denoting the days of the months noted at the head of each. The first column gives the date of conception; the second, that of the period of quickening; and the third, that of delivery. Thus, if a lady dates the period of conception Jan. 1, 1870, quickening will occur May 20, and confinement about the 8th of October following; or, if she is ignorant of the time of conception, by consulting the middle column as to the time of quickening, if it occurs May 20, she may expect her confinement to occur about the 8th of October following, or 140 days after the period of quickening. The date in the first column is that of conception; the corresponding date in the second column is that of quickening; and the corresponding date of the third column, that of confinement.

January.			February.			March.			April.		
Concep'n.	*Quicken'g.*	*Deliv'y.*	*Concep'n.*	*Quicken'g.*	*Deliv'y.*	*Concep'n.*	*Quicken'g.*	*Deliv'y.*	*Concep'n.*	*Quicken'g.*	*Deliv'y.*
Jan.	May	Oct.	Feb.	June	Nov.	March	July	Dec.	April	Aug.	Jan.
1	20	8	1	20	8	1	18	6	1	18	6
2	21	9	2	21	9	2	19	7	2	19	7
3	22	10	3	22	10	3	20	8	3	20	8
4	23	11	4	23	11	4	21	9	4	21	9
5	24	12	5	24	12	5	22	10	5	22	10
6	25	13	6	25	13	6	23	11	6	23	11
7	26	14	7	26	14	7	24	12	7	24	12
8	27	15	8	27	15	8	25	13	8	25	13
9	28	16	9	28	16	9	26	14	9	26	14
10	29	17	10	29	17	10	27	15	10	27	15
11	30	18	11	30	18	11	28	16	11	28	16
12	31	19		July		12	29	17	12	29	17
	June		12	1	19	13	30	18	13	30	18
13	1	20	13	2	20	14	31	19	14	31	19
14	2	21	14	3	21		Aug			Sept.	
15	3	22	15	4	22	15	1	20	15	1	20
16	4	23	16	5	23	16	2	21	16	2	21
17	5	24	17	6	24	17	3	22	17	3	22
18	6	25	18	7	25	18	4	23	18	4	23
19	7	26	19	8	26	19	5	24	19	5	24
20	8	27	20	9	27	20	6	25	20	6	25
21	9	28	21	10	28	21	7	26	21	7	26
22	10	29	22	11	29	22	8	27	22	8	27
23	11	30	23	12	30	23	9	28	23	9	28
24	12	31			Dec	24	10	29	24	10	29
		Nov.	24	13	1	25	11	30	25	11	30
25	13	1	25	14	2	26	12	31	26	12	31
26	14	2	26	15	3			Jan.			Feb.
27	15	3	27	16	4	27	13	1	27	13	1
28	16	4	28	17	5	28	14	2	28	14	2
29	17	5				29	15	3	29	15	3
30	18	6				30	16	4	30	16	4
31	19	7				31	17	5			

May.			June.			July.			August.		
Concep'n.	*Quicken'g.*	*Deliv'y.*	*Concep'n.*	*Quicken'g.*	*Deliv'y*	*Concep'n.*	*Quicken'g.*	*Deliv'y.*	*Concep'n.*	*Quicken'g.*	*Deliv'y*
May	Sept.	Feb.	June	Oct.	March	July	Nov.	April	Aug.	Dec.	May
1	17	5	1	18	8	1	17	7	1	18	8
2	18	6	2	19	9	2	18	8	2	19	9
3	19	7	3	20	10	3	19	9	3	20	10
4	20	8	4	21	11	4	20	10	4	21	11
5	21	9	5	22	12	5	21	11	5	22	12
6	22	10	6	23	13	6	22	12	6	23	13
7	23	11	7	24	14	7	23	13	7	24	14
8	24	12	8	25	15	8	24	14	8	25	15
9	25	13	9	26	16	9	25	15	9	26	16
10	26	14	10	27	17	10	26	16	10	27	17
11	27	15	11	28	18	11	27	17	11	28	18
12	28	16	12	29	19	12	28	18	12	29	19
13	29	17	13	30	20	13	29	19	13	30	20
14	30	18	14	31	21	14	30	20	14	31	21
	Oct.			Nov.			Dec.			Jan.	
15	1	19	15	1	22	15	1	21	15	1	22
16	2	20	16	2	23	16	2	22	16	2	23
17	3	21	17	3	24	17	3	23	17	3	24
18	4	22	18	4	25	18	4	24	18	4	25
19	5	23	19	5	26	19	5	25	19	5	26
20	6	24	20	6	27	20	6	26	20	6	27
21	7	25	21	7	28	21	7	27	21	7	28
22	8	26	22	8	29	22	8	28	22	8	29
23	9	27	23	9	30	23	9	29	23	9	30
24	10	28	24	10	31	24	10	30	24	10	31
		March			April			May			June
25	11	1	25	11	1	25	11	1	25	11	1
26	12	2	26	12	2	26	12	2	26	12	2
27	13	3	27	13	3	27	13	3	27	13	3
28	14	4	28	14	4	28	14	4	28	14	4
29	15	5	29	15	5	29	15	5	29	15	5
30	16	6	30	16	6	30	16	6	30	16	6
31	17	7				31	17	7	31	17	7

September.			October.			November.			December.		
Concep'n.	*Quicken'g.*	*Deliv'y.*	*Concep'n.*	*Quicken'g.*	*Deliv'y.*	*Concep'n.*	*Quicken'g.*	*Deliv'y.*	*Concep'n.*	*Quicken'y.*	*Deliv'y*
Sept.	Jan.	June	Oct.	Feb.	July	Nov.	March	Aug.	Dec.	April	Sept.
1	18	8	1	17	8	1	20	8	1	19	7
2	19	9	2	18	9	2	21	9	2	20	8
3	20	10	3	19	10	3	22	10	3	21	9
4	21	11	4	20	11	4	23	11	4	22	10
5	22	12	5	21	12	5	24	12	5	23	11
6	23	13	6	22	13	6	25	13	6	24	12
7	24	14	7	23	14	7	26	14	7	25	13
8	25	15	8	24	15	8	27	15	8	26	14
9	26	16	9	25	16	9	28	16	9	27	15
10	27	17	10	26	17	10	29	17	10	28	16
11	28	18	11	27	18	11	30	18	11	29	17
12	29	19	12	28	19	12	31	19	12	30	18
13	30	20		March			April			May	
14	31	21	13	1	20	13	1	20	13	1	19
	Feb		14	2	21	14	2	21	14	2	20
15	1	22	15	3	22	15	3	22	15	3	21
16	2	23	16	4	23	16	4	23	16	4	22
17	3	24	17	5	24	17	5	24	17	5	23
18	4	25	18	6	25	18	6	25	18	6	24
19	5	26	19	7	26	19	7	26	19	7	25
20	6	27	20	8	27	20	8	27	20	8	26
21	7	28	21	9	28	21	9	28	21	9	27
22	8	29	22	10	29	22	10	29	22	10	28
23	9	30	23	11	30	23	11	30	23	11	29
		July	24	12	31	24	12	31	24	12	30
24	10	1			Aug.			Sept.			Oct.
25	11	2	25	13	1	25	13	1	25	13	1
26	12	3	26	14	2	26	14	2	26	14	2
27	13	4	27	15	3	27	15	3	27	15	3
28	14	5	28	16	4	28	16	4	28	16	4
29	15	6	29	17	5	29	17	5	29	17	5
30	16	7	30	18	6	30	18	6	30	18	6
			31	19	7				31	19	7

PRONOUNCING DICTIONARY.... GLOSSARY.

AB-DO'MEN. The belly.

A-CE-TAB'U-LUM The socket for the head of the thigh bone; an ancient vessel for holding vinegar.

AB-DOM'I-NAL CAV'I-TY. The cavity of the belly.

AD-DUC'TOR. A muscle which draws one part of the body towards another.

AB-SOR'BENTS. Glands and vessels which absorb or suck up substances from within, or without; also, medicines which, though nearly or quite inactive themselves, absorb, or combine with acid matter in the stomach or bowels.

A-CRO'MI-ON. That part of the scapula, or shoulder-blade, which unites with the collar-bone.

AL-BU-GIN'E-A. The white of the eye.

AL'TER-A-TIVES. Medicines which gradually reëstablish health, without sensibly increasing the circulation, or augmenting the perspiration, urine, or other excretions.

AL'VE-O-LAR. Relating to the sockets of the teeth.

AL'VINE (*Al'vin*). Relating to the intestines, as *alvine discharges*. — discharges from the bowels.

A-MOR'PHOUS. Having no regular form.

AM-NI-OT'IC LIQ'UID. The fluid surrounding the fetus in the womb.

AN-ÆS-THE'SIA. Suspended sensibility.

AN-AS'TO-MOSE. The uniting of arteries and veins by joining their mouths.

AN-CHY-LO'SIS. A stiff or useless joint.

AN-I-MAL'CU-LÆ. Animals so small that they can only be seen with a microscope.

AN-Œ'MI-A. Privation of blood; a comparatively bloodless state.

AN'O-DYNES. Medicines which diminish sensibility, abate pain, and induce sleep. It should always be remembered that anodynes when frequently, and long taken, lose their influence in disease.

ANT-A'CIDS. Preparations which neutralize acidity of the stomach and bowels.

ANT-AL'KA-LIES. Agents which neutralize alkalies.

AN-TA-PHRO-DIS'I-ACS. Agents which lessen or blunt the sexual propensities.

AN-THEL-MIN'TICS. Medicines which destroy and expel worms.

AN'TI-DOTES. Medicines which counteract and destroy the effects of poison.

AN-TI-PE-RI-OD'ICS. Medicines which prevent or cure diseases of a periodical character.

AN-TI-PHLO-GIS'TICS. Medicines or diet which remove or appease inflammation.

AN-TI-SPAS-MOD'ICS. Medicines which prevent or allay spasms, commonly called cramps.

AN-TI-SYPH-I-LIT'ICS. Medicines which cure syphilis.

AN-TI-SEP'TIC. Whatever checks or counteracts putrefaction.

AN-TI-SCOR-BU'TICS. Articles which prevent and cure scurvy.

A-PE'RI-ENTS. Medicines which gently open the bowels.

A-PHO'NI-A. A loss of the voice.

APH-RO-DIS'I-ACS. Medicines supposed to excite and promote the sexual appetite.

A-PON-EU-RO'SIS. The membranous expansion of tendons and muscles.

A-RE-O'LA. A colored circle, as the circle around the nipple.

AR-O-MAT'ICS. Medicines which have a grateful, spicy smell, and an agreeable, pungent taste.

AS-PHYX'I-A Suspended animation; apparent death.

AS-THEN'IC. Relating to debility; or to disease marked by debility.

AS-TRIN'GENTS. Medicines which have the power to constringe or pucker up the tissues of the body, and thereby check discharges.

AT'RO-PHY. A wasted condition; leanness.

AX-IL'LA. The arm-pit.

AUS-CUL-TA'TION. The art of detecting disease by listening to the sounds of the lungs, heart, etc.

AU-TOP'SY. Personal inspection, — used in the sense of a post-mortem examination.

A-ZOTE'. Nitrogen; one of the constituents of the atmosphere.

BRON'CHI-A. The pipes which convey the air through the lungs.

BUR'SÆ MU-CO'SA. Small sacs, situated under tendons, about the joints, containing a sticky fluid.

CAL'CU-LUS. A solid, unorganized body formed in the kidneys, or bladder, and called a stone. The plural is *calculi*.

CAP'IL-LA-RY. Small; resembling a hair.

CAP'SULE. A membraneous bag, enclosing a part.

CAR'TI-LAGE. Gristle attached to the ends of the bones.

CAR-MIN'A-TIVES. Medicines which expel wind from the stomach and bowels, and allay the pain caused by it.

CA-THAR'TICS, Medicines which purge the bowels.

CER'VIX. The neck. *Cer'vix U'ter-i.* The neck of the womb.

CAR'DI-AC. Relating to the heart.

CAR'PAL. Relating to the wrist.

CAT-A-ME'NI-A. The monthly flow of females.

CA-THAR'SIS. Purging.

CATH'E-TER. A tube for drawing off the urine.

CEL-LU'LAR. Relating to cells.

CER'E-BRAL. Relating to the brain.

CHA-LYB'E-ATE. Containing iron or steel.

CHE-MO'SIS. A swelling of the eye, in which the eye projects, with a depression in the centre.

CHO'LA-GOGUE. A medicine which causes a discharge of bile.

CLO'NIC SPASMS. Spasms which are rigid and relaxed alternately.

COL-LI'QUA-TIVE. This term is applied to excessive and exhausting discharges.

CO-LOS'TRUM. The first secretion of milk.

CO'MA. Profound stupor, or sleep.

CON'DYLE (kon'dil). A knob; applied to certain projections of bones at joints.

CON'FLU-ENT. Not distinct; running together.

CON-GEN'I-TAL. Existing at the time of birth.

CON-GES'TION. Distention of parts by an accumulation of blood in them.

CON-JUNC'TI-VA. The membrane which covers the eye and lines the eye-lid.

CON'TRA-IN'DI-CA-TED. Not indicated; the opposite implied.

CORD'IALS. Medicines which have a grateful, warming, and exhilarating effect upon the stomach.

COUN'TER-IR'RI-TANTS. Articles which by irritating one part, withdraw blood from, and relieve another.

CRI'SIS. The turning point of a disease.

CU'TI-CLE. The epidermis; the scarf-skin.

DE-CID'U-A. A thin, external membrane, within the womb, thrown off after child-bearing.

DE-LIQ'UI-UM. Fainting.

DE-MUL'CENTS. Medicines of a softening nature, which correct acrid conditions, and, by their bland effects, soothe inflamed and irritated parts.

DE-PLE'TION. Diminishing the fulness of a part or parts, as by purgatives, or bleeding.

DE-SQUA-MA'TION. Separation of the skin in scales; scaling off.

DE-TER'GENTS. Medicines which cleanse.

DI-AG-NO'SIS. The art of determining the nature of diseases.

DI-A-PHO-RET'ICS. Medicines which promote sweating.

DI-ATH'E-SIS. Any particular disposition, state, or habit of body.

DI-U-RE'SIS. Copious flow of urine.

DIL'U-ENTS. Watery drinks, which increase the fluidity of the blood, and render several of the secretive and excretive fluids less viscid.

DIS-CU'TIENTS. Medicines which scatter, resolve, or disperse tumors.

DIS-IN-FEC'TANTS. Articles which purify or cleanse infected places.

DI-U-RET'ICS. Medicines which increase urinary secretions.

DRAS'TICS. Strong and violent purgatives.

DYSP-NŒ'A. Difficulty of breathing.

E-ME'SIS. Vomiting.

E-MET'ICS. Medicines which cause the stomach to reverse its action, and throw its contents up through the mouth.

EM-MEN'A-GOGUES. Medicines supposed to have the power of exciting or increasing the menses.

E-MOL'LIENTS. Those substances which have the power of softening or relaxing the animal fibre, when applied externally.

EN-DEM'IC DIS-EAS'ES. Diseases prevailing in certain localities or districts.

EP-I-DEM'IC DIS-EAS'ES. Diseases extending over a large extent of country.

EP-I-GLOT'TIS. The cartilage, which, in the act of swallowing, shuts down upon the top of the wind-pipe, and prevents food from going into the breath-passage.

EP-IS-PAS'TICS. Substances which inflame the skin, and raise the cuticle, and cause what is called a blister.

ES-CHA-ROT'ICS. Articles which burn, corrode, disorganize, and destroy the animal tissues, causing what is called an eschar, or slough, which is dead matter, and falls off.

EX-PEC'TO-RANTS. Articles which act upon the system, so as to make the discharge of mucus and other substances from the air-tubes more easy.

ER'RHINES. Substances which cause sneezing, and a discharge of mucus from the nose when snuffed.

ES'CHAR. The dead part, killed by caustic, or mortification, which falls off; a slough.

EX-FO-LI-A'TION. A scaling off, as a piece of dead bone.

FAU'CES. The back part of the mouth.

FE'BRILE. Belonging to fever.

FE'CES. The matter discharged from the bowels.

FEB'RI-FU-GES. Medicines which assuage or remove fevers.

FLA'TUS. Wind, or rather, gas, in the stomach or bowels.

FOL'LI-CLE. A little bag or sac.

FO-RA'MEN. A hole, or opening.

FOR-MI-CA'TION. A sensation like the creeping of ants.

FUR-FU-RA'CEOUS. Branny, or scaly.

GANG'LI-ON. An enlargement in the course of a nerve.

GAN'GRENE. Mortification; partial death.

GAS'TRIC. Belonging to the stomach.

GES-TA'TION. The period of pregnancy.

GLOT'TIS. The opening into the wind-pipe, covered by the epiglottis.

GRAN'U-LAR. Like small grains.

GRAN'U-LA-TED. Covered with granulations.

GRAN-U-LA'TION. The filling up or covering of a wound, or ulcer, with small, red elevations, looking like grains.

HÆ-MOP'TY-SIS. Raising blood from the lungs.

HE-MI-CRA'NI-A. Pain on one side of the head.

HÆM'OR-RHAGE. A flow of blood.

HÆM-OR-RHA'GIC. Having a tendency to bleed.

HE-PAT'IC. Belonging to the liver.

HY-PER-CA-THAR'SIS. Excessive purging.

HY-PER'TRO-PHY. An unnatural enlargement of an organ, without change of structure.

HYP-NOT'ICS. Medicines which cause sleep.

ICH'OR (*Ikor*). A thin, watery, and acrid discharge.

IN-TER-COS'TAL. Between the ribs.

LAR'YNX. The top of the wind-pipe; the cavity which contains the vocal ligaments.

LAX'A-TIVES. Medicines which render the bowels a little more relaxed than natural, but do not purge.

LIG'ATE. To secure with a ligature.

LIG'A-TURE. A cord, or thread.

LO'CHI-A. The bloody discharge from the womb for some time after child-birth.

LO'CHI-AL. Relating to the lochia.

LYMPH. A whitish fluid contained by the lymphatic vessels.

LYM-PHAT'ICS. The vessels which carry lymph.

MAC-ER-A'TION. The act of softening or soaking a thing by letting it stand in water.

MAC'U-LÆ. Colored spots; blemishes.

MA-LA'RI-A. Noxious gases from decomposed matter.

MAM'MA. The female breast.

MAN-DIB'U-LAR. Relating to the jaw.

MAS-TI-CA'TION. The act of chewing.

MAS-TUR-BA'TION. The act of exciting the genital organs with the hands.

MEN'STRU-UM. Any solvent, or vehicle.

MET-A-CAR'PUS. The hand between the wrist and the fingers.

ME-TAS'TA-SIS. The changing of a disease from one place to another.

MET-A-TAR'SUS. That part of the foot between the ankle and the toes.

MI-AS-MAT'IC. Partaking of the nature of miasm.

MU'CO-PU'RI-FORM. Composed of both mucus and pus.

MU'CO-SE'RO-LENT. Composed of both mucus and serum.

NAR-COT'ICS. Medicines which relieve pain and produce sleep.

NAU'SE-ANTS. Medicines which cause sickness at the stomach, or a disposition to vomit. They are often used as expectorants.

NOS-OL'O-GIST (*Nose-ol'o-gist*). One who explains and classifies diseases.

NU'CLE US. A central spot.

NU-CLE-O'LUS. A spot within a nucleus.

OR-THOP-NŒ'A. Great difficulty of breathing.

OS U'TER-I. The mouth of the womb.

OS-SI-FI-CA'TION. The formation of bone.

O'VUM. An egg. O'VA. Eggs.

PA-PIL'LA. A red, elevated point upon the tongue, or elsewhere. Certain diseases make these points more prominent.

PAR-A-CEN-TE'SIS. The operation of puncturing the chest, or the abdomen, for the purpose of drawing off water.

PAR-A-PHLE'GI-A. Paralysis of the lower half of the body.

PAR'OX-YSM. A fit of disease taking place periodically.

PAR-TU'RI-ENT. Bringing forth, or giving birth.

PAR-TU'RI-ENTS. Medicines which promote child-bed labor, by causing contractions of the womb.

PAR-TU-RI'TION. Child-birth.

PEC'TO-RALS. Medicines intended to cure or relieve diseases of the chest.

PEL'VIS. The bony cavity, or basin, at the lower part of the body, containing the womb, abdomen, rectum, etc.

PER-I-NE'UM. The part, or space, between the anus and testicles.

PER-I-OS'TE-UM. A thin, hard membrane, covering the bones.

PER-I-OS-TI'TIS. Inflammation of the periosteum.

PER-I-TO-NE'UM. A serous membrane lining the cavity of the belly, and folded over most of the organs contained in it.

PET-E'CHI-Æ. Purple spots which appear upon the skin in low fevers, looking like fleabites; called also ecchymoses.

PHA-GE-DEN'IC. Corroding, eating, — applied to ulcers.

PHA-LAN'GES. The bones of the fingers and toes.

PHAR'YNX. The upper part of the throat.

PHLEG-MO'NOUS IN-FLAM-MA'TION. Inflammation marked by redness, heat, and pain, and a tendency to form matter.

PROG-NO'SIS. The art of foretelling the termination of diseases.

PTY'A-LISM. Salivation.

PRI'A-PISM. A continued erection of the penis from exciting, morbid causes.

RE-FRIG'ER-ANTS. Medicines which lessen the heat of the body.

RE-LAX'ANTS. Medicines which relax the tension of the muscles.

RE-MIS'SION. A lessening or mitigation of the severity of the symptoms of a disease.

RES-O-LU'TION. Dispersion of an inflammation before pus is formed.

RE-VUL'SIVES. Medicines or appliances which remove a disease by causing a determination to some other part.

RU-BE-FA'CIENTS. Applications which excite the skin, causing the blood to flow to it, and making it red.

SA'NIES. A thin fluid discharged from ulcers, having some of the properties of pus and blood

SED'A-TIVES. Medicines which diminish the action of the heart and nerves, and which are used when we wish to allay any excited action in the system.

SE'ROUS. Watery.

SCRO'TUM. The bag which contains the testicles.

SCYB'A-LA. Hard, round lumps in the feces.

SI'A-LA-GOGUES. Medicines which increase the flow of saliva.

SLOUGH (*Sluff*) Any part of the body killed by mortification, or caustic, and cast off.

SPER-MAT'IC CORDS. Two cords, composed of nerves, veins, and arteries, descending, one on each side, from the abdomen into the scrotum, and suspending the testicles.

SQUA'MOUS. Scaly; having scales.

SOR'DES. The dark matter deposited upon the lips and teeth, in low fevers.

STER'NUM. The breast-bone.

STER'TOR. Noisy breathing, as in apoplexy. Snoring.

STER'TOR-OUS. Snoring and noisy, as applied to breathing.

STIM'U-LANTS. Medicines which increase the activity of the system.

STO-MACH'ICS. Medicines which support and renovate the stomach, making its action healthy.

STRU'MA. Scrofula.

STYP'TICS. Substances which, when applied externally, have the power to constringe or pucker up bleeding vessels, and stop the loss of blood.

SUB-CU-TA'NE-OUS. Under the skin.

SUB-MAX'IL-LA-RY. Under the lower jaw.

SUB-SUL'TUS TEN'DI-NUM. Slight twitchings of the tendons, which occur in low forms of fever.

SU-DO-RIF'ICS. Medicines which cause a flow of perspiration, rather more free than that produced by diaphoretics.

SUP-POS'I-TO-RIES. Solid medicinal substances, of a conical or cylindrical shape, which are placed in the rectum for the purpose of relieving constipation and the piles, and for removing stricture.

SYN'CO-PE. Fainting; swooning.

TE-NES'MUS. A painful bearing down in the lower bowel, and a distressing desire to go to stool.

TON'ICS. Medicines which gradually give tone and strength to weakened organs, or to the whole system. Some act upon the nervous system, and some upon the other tissues, by condensing, hardening, and invigorating them.

TOR'MI-NA. Griping pain.

U-RE'TERS. The tubes which convey the urine from the kidneys to the bladder.

U-RE'THRA. The canal which conveys the urine from the bladder out of the body.

U'TER-US. The womb.

VAG'I-NA (*Vadg'i-na*). The passage from the external genital organs to the womb.

VA'RI-COSE VEINS. Veins which are morbidly enlarged, and present along their course soft, knotty, purplish tumors.

VER'TI-GO. Dizziness; giddiness.

VE-SI-CA'TION. Blistering.

VI'RUS. Poison; contagion.

VIS'CUS. A liver, stomach, kidney, heart, or any organ within one of the cavities of the body.

IT is believed that the hard words introduced into this book, and not contained in the above Glossary, are nearly or quite all explained at the places where they are used.

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